

# **IOWA DOT**

**IOWA COMMUTER TRANSPORTATION STUDY**



**December 2014**

Preparation of the Iowa Commuter Transportation study required the input and efforts of many people. This report acknowledges and expresses our appreciation for everyone's efforts.

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## Executive Summary

The Iowa legislature directed the Iowa Department of Transportation (Iowa DOT) "to conduct a study to identify administrative needs, projected demand, necessary capital and operating costs, and public transit service structures including park and ride lots, employer or public vanpool programs, and traditional fixed-route transit. The Iowa DOT shall submit a report with findings and recommendations to the general assembly on or before December 15, 2014." To meet this requirement, the Iowa DOT commissioned the Iowa Commuter Transportation Study (ICTS) to identify the existing and future commuter needs in the Interstate 380 (I-380) corridor and determine the viability of various commuter transportation improvements to address those needs.

The Office of Public Transit (OPT) was responsible for managing the study through a Project Management Team which included staff representatives of Iowa DOT's System Planning unit and the East Central Iowa Council of Governments (ECICOG). Iowa DOT retained HNTB, a transportation planning and engineering firm that has been assisting Iowa DOT with the assessment of I-380 improvements. A 15-person Advisory Group, comprised of transportation, planning and economic development stakeholders, was instrumental in providing valuable input throughout the study. The study relied heavily on input from major employers in the study area and the results of two public surveys that produced a combined total of nearly 1,000 responses from study area commuters.

Commuting between the Cedar Rapids and Iowa City metropolitan areas is significant. As shown in the table below, there are over 7,500 commuters travelling between the Cedar Rapids and Iowa City metropolitan areas and most of these commuters are traveling during the peak periods using I-380.

**Table E-1: Cedar Rapids Metropolitan Area – Iowa City Metropolitan Area Commuter Patterns**

Origin Area	Destination	Total Commuters
Cedar Rapids/Hiawatha/Marion	North Liberty/Coralville/Iowa City	4,159
North Liberty/Coralville/ Iowa City	Cedar Rapids/Hiawatha/Marion	3,371

*Source: U.S. Census Bureau, American Community Survey 2006-2010 5-year samples*

The public interest for improvements in the I-380 corridor is evident from the public surveys. Over 90 percent of respondents think transportation improvements are needed. Nearly 70 percent of respondents stated that they would use a public bus for their commute, indicating significant support for transit and other forms of ridesharing. For a detailed breakdown of survey results, see **Appendices A** and **B**.

## I-380 Commuter Transportation Improvements

The study recommended a package of commuter improvements that could be implemented as a comprehensive program, or individually, reflecting the realities of funding and local priorities. This package of improvements includes:

- **Public Interregional Express Bus Service:** A new interregional fixed route bus service connecting Cedar Rapids, North Liberty, Coralville and Iowa City.
- **Subscription Bus Service:** This service can be tailored to the commuter needs of a specific locale or even a single employer and would be ideal to serve large employers.
- **Public Vanpool Program:** Open to the public, uses passenger vans supplied by a public agency or agencies driven by one of the vanpool participants. Vanpools typically have ten to sixteen participants with similar origins and destinations
- **Public Carpool Program:** A formal sharing of rides using one of the participant's private automobile. Carpooling typically has two to six participants with similar origins and destinations.

Commuter rail service in the corridor was previously studied in the Cedar-Iowa River Rail Transit Project Feasibility Study in 2006; this mode was considered in the evaluation. However, the capital and operating costs, and the cost effectiveness measured by cost per passenger was found to be significantly greater than comparable bus options. Therefore, at this time, the commuter rail service is not recommended to be pursued as part of the preferred package of service improvements in the short or mid-term. However, as pointed out in the previous study, the communities may reevaluate in the future.

This package of improvements also includes recommended infrastructure and technology improvements that will augment the service alternatives and make them more effective:

- **Park and ride facilities:** These are convenient locations along or near the primary commuting corridor to park private autos and connect to some form of public or private transportation which may include vanpools, carpools, and public bus service.
- **Regional Commuter Travel Information:** This is a readily accessible and comprehensive source of information on all commuter transportation options in a defined area. Information includes routing, pick-up points, schedules, fares and fees, and other information necessary for commuters to make decisions regarding mode of travel.
- **Transit Priority Measures:** These are transportation engineering tactics intended to make public transit and ridesharing more attractive to potential users by reducing travel time and improving reliability. Priority measures include strategies such as dedicated transit or high occupancy vehicle (HOV) lanes, bus-on-shoulder operation, traffic signal priority and queue jump lanes.
- **Guaranteed Ride Home:** This service is used in conjunction with public transportation and rideshare options to provide a ride home in case of an emergency (illness, personal crisis), usually a cab ride that is reimbursed up to a certain amount.



## Public Interregional Express Bus Service

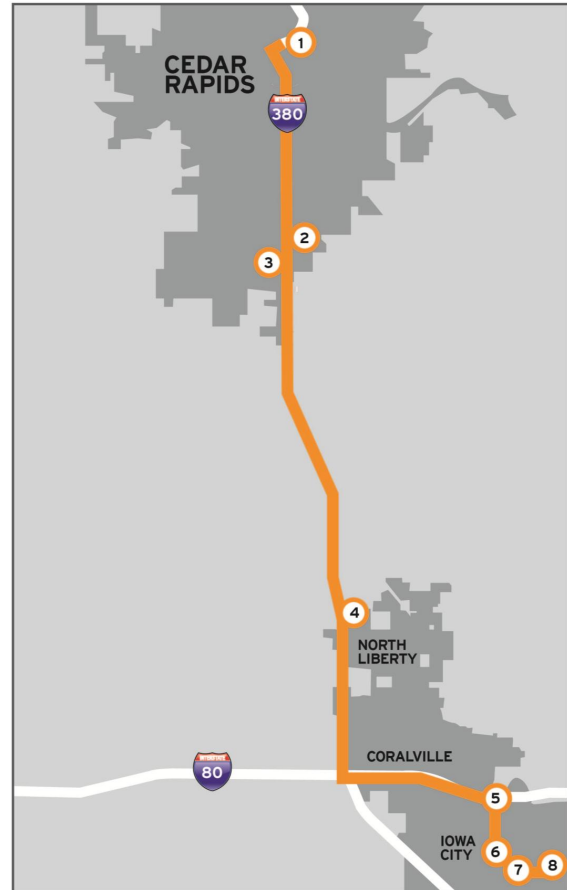
This 2-way premium express service would operate with a minimum number of stops to minimize travel time in order to make the service as competitive as possible with auto commuting. In concept, the service would operate between downtown Cedar Rapids and downtown Iowa City using I-380 and I-80, with potential stops at the Cedar Rapids Ground Transportation Center, Kirkwood Community College, park and ride near the Eastern Iowa Airport, park and ride near North Liberty, the Coralville Intermodal Facility, University of Iowa, University of Iowa Hospitals and Clinics, and the Iowa City Court Street Transportation Center.

The service would rely on park and ride lots as collection points for the dispersed commuter origins and the current transit networks for distribution to destinations not within walking distance of stops. The graphic to the right shows this concept.

Four operating plans with varying service frequency were evaluated for the express service. The option with 30 minute service during the peak periods, assumed to be 5 a.m. to 9 a.m. and 3 p.m. to 7 p.m., was judged to be the most effective in balancing costs and benefits such as ridership. Ridership was estimated at 563 daily trips for the 30 minute frequency option. For any of the alternatives, midday off peak service can be considered, however, this service may be eliminated if a guaranteed ride home program is in place.

The proposed service would use standard 40 passenger transit buses. Operating and capital costs were estimated for all of the bus options evaluated and are presented in the final report. For simplicity, only figures for the 30 minute frequency option are shown in **Table E.2** below. The capital costs do not include the cost of vehicle storage and park and ride lots. Initial park and ride lots could include no cost lease options on shared use private lots. The table below shows the public transportation-related costs that require new funding.

**Figure E-1: Conceptual Public Interregional Express Bus Alignment and Stops**



**Table E-2: Public Transportation Option Costs and Revenues – 2014 dollars**

Service Option	High Estimate	Low Estimate
*Transit Only Capital Cost	\$2,831,000	\$990,000
Annual Operating Cost	\$1,037,000	\$676,000
Passenger Revenue	\$502,000	\$502,000
Annual Operating Funding Needed	\$535,000	\$174,000

*\*Note: Capital costs only include vehicles costs.*

The figures in **Table E.2** are shown as a range reflecting the uncertainty of estimating costs for a service that is defined only conceptually, and the fact that there are many different ways to deliver the service, all of which have different cost implications.

## Subscription Public Bus Service

A subscription bus is tailored to the commuter needs of a specific locale or even a single employer. Large employers sometimes have a need to move a relatively large number of employees, 20 to 30 or more, from an origin area to the workplace. In concept the service works similar to a vanpool except the vehicle is larger, usually a small to medium size bus, and the driver is a professional rather than one of the commuters.

The design and operation of a subscription bus is very flexible; often the service consists of one trip to the workplace and a return trip after the workday. The route can be designed to access the largest number of employees; a park and ride lot is typically used as a collection point. The service can be limited to employees of a single company, or can be open to the public, serving multiple employers.

The Whirlpool manufacturing plant near the Amana Colonies is an example of a location that may be effectively served by a subscription bus. With a current workforce of 2,200 and growing, and a location remote from large numbers of employees, the plant would benefit from a more structured approach to commuter options. However, the low density area of the plant cannot support regular fixed route transit service.

## Public Vanpool Program

To meet the needs of dispersed origins, particularly in the rural areas not directly served by the I-380 corridor, a public regional vanpool program was recommended. This program would complement the proposed interregional express bus service and address service gaps of existing private vanpools by providing a service that is open to the public and is an efficient and cost-effective employment transportation option for commuters with dispersed origins.

Two vanpool programs are currently provided in the study area. The University of Iowa provides a program that is limited to university employees with 80 vanpools including 15 in the I-380 corridor from the Cedar Rapids area. A private firm, vRide provides private vanpool service, however, it is up to individuals who live and work in the same areas to collectively organize.

An expanded public vanpool program can take different forms. The vanpool program could be operated by an existing transit service operator or other agency eligible to receive federal and state funding. The benefit of this is that the operator could use federal and state transit funding for vehicle acquisition thereby lowering the cost to the commuter. The program requires administrative and management support to handle responsibilities such as vehicle acquisition, defining program policies and procedures, training drivers, assisting in ridematching and program accounting. Alternatively, an agency could contract with a private firm such as vRide to handle all operational aspects of the program.

It is possible for user fees to cover all program costs. In practice user fees would be set to achieve program policies regarding cost recovery. Typically, agency operated programs cover some costs through grants or local transit funding. Operating costs typically are in the range of \$10,000 to \$12,000 per vanpool, although program costs vary widely. The capital cost of the vans is either realized as an outright purchase cost, or a lease cost. Vans typically cost in the range of \$35,000 to \$40,000 per vehicle.

There is no reliable means to estimate the demand for vanpooling, however the public surveys revealed a high level of interest among survey respondents in vanpooling (and carpooling). Moreover, much of the study area outside of the I-380 corridor does not currently have commuter transit service and likely will not be able to support transit in the foreseeable future.

## Public Carpool Program

A carpool program can be implemented less expensively than other programs and is recommended because of its ease of implementation and cost effectiveness. A formal carpool program is a natural element of a commuter transportation program. Employers and stakeholders have noted their desire for a centralized ridematching system. This would need to be integrated into existing programs and would need to be actively promoted by sponsoring agencies.

## Statewide Applicability

Iowa's socioeconomic and passenger travel trends suggest there will be a need to identify travel demand management strategies for increasing the safety and efficiency of Iowa's transportation system. Increased population in and around metropolitan areas will create congestion and capacity issues as long as single-occupant vehicle travel remains the primary mode of travel. As Iowans drive longer distances to work, it will be increasingly important to identify and maintain commuter routes with facilities and services that provide alternatives to the single-occupant vehicle.

When examining the applicability of this effort to other areas of the state, the advisory group and project management team looked to identify other commuter corridors that were comparable to the Cedar Rapids-Iowa City corridor. The general consensus was that there was only one truly comparable corridor in the state of Iowa, that being the Ames-Des Moines corridor. Here you also have two metropolitan areas (population greater than 50,000), separated by roughly the same distance, and connected by a similar interstate highway facility that carries comparable levels of passenger traffic.

Having identified Ames-Des Moines as a comparable corridor where this effort may have some direct applicability, it was noted that a feasibility study was already underway for this corridor, led by the Des Moines Area Metropolitan Planning Organization. The final Ames-Des Moines I-35 Commuter Corridor Feasibility Study was published on August 19, 2014 and contained conclusions similar to those identified in the ICTS. The Ames-Des Moines study found that sufficient demand exists to warrant investment in a commuter express bus service operating along the I-35 corridor during the weekday peak periods.

While these two corridors are somewhat unique in a statewide context, the methodology applied in the development of the ICTS could certainly be applied to other commuter corridors, although the recommendations would likely differ. In addition to the ICTS, the Iowa DOT has also recently engaged in other commuter transportation planning efforts, including the recent completion of the Iowa Park and Ride System Plan and ongoing efforts related to the development of a statewide ride-matching system.

The *Iowa Park and Ride System Plan* will be used by the Iowa DOT to plan, evaluate, and develop a formal statewide system of park and ride facilities. For the purposes of this plan, park and ride facilities are places to park a vehicle when carpooling, vanpooling, or taking public transit. The plan provides the framework for determining the current need for commuter park and ride services, evaluating the existing system, identifying gaps in service, and guiding potential system expansion. The primary objective of the plan was to develop a location-specific, priority-based park and ride system that allows for coordinated planning and implementation of park and ride facilities that maintain highway safety, encourage ridesharing, support commuter transportation, and promote energy conservation.

Related to this effort is the development of a statewide rideshare program that can be used to match potential carpool and vanpool participants using a single ride-matching system. Historically, rideshare services across Iowa have been administered in a decentralized model where the Iowa DOT has not been involved in the procurement, administration, or marketing of local rideshare programs. This model requires rideshare organizations to provide separate startup funding and yearly support fees, reduces the overall number of matches available for potential rideshare participants, and is not consistently administered across the state.

The result of this has been an inefficient and costly system that does not serve all of Iowa's communities and results in fewer ride matches created. The statewide rideshare project will provide a more efficient, affordable, and user-friendly service by eliminating the need for multiple global administrators, reducing capital and operating expenses, and consolidating services into a single software system. The goal of this program is to increase the number of people who wish to take part in car pools, van pools, and public transit services.

## Next Steps

The following ICTS next steps are necessary for the implementation of the ICTS recommended package of service improvements.

1. **Identify Lead Agency for Implementation:** The implementation of the ICTS recommendations will involve an active partnership between multiple jurisdictions and agencies within the region. However, one agency should be identified to lead the effort. ECICOG was suggested as the agency that could lead the initial effort of coordinating initial discussion between the study partners. Although not identified as a lead agency, Iowa DOT would continue to have an important role in the initiative.
2. **Form Study Implementation Committee:** The lead agency will organize a study implementation committee comprised of study area jurisdictions, public agencies and service providers. The function of the committee would coordinate implementation efforts.

3. **Identify and Pursue Preferred Funding and Financing Options for Implementation:** The implementation of the ICTS recommendations will likely require multiple funding sources, some existing such as state and federal funding programs, some new such as a regional transit district, a special assessment district or other sales or property tax.
4. **Create an Implementation Plan:** Given the recommendations and established priorities, and with more information on funding needs and availability, a detailed implementation plan should specifically list the steps to implement each of the projects and programs. There are multiple ways to operate and manage each of the service improvements. However, this will require more deliberation from the Study Implementation Committee, public agencies, transit service providers, local governments, and more detailed discussions with corridor stakeholders including major employers on how best to implement the improvements.
5. **Define Project Phasing Based on Available Funding and Priorities:** Initial funding through one-time state or federal grants or other mechanism may be able to fund initial improvements. Implementation can be phased based on available funding and financing, as well as the community's priorities. There are several initiatives already underway such as the Iowa DOT's park and ride program, the statewide ridematching system deployment and the statewide transportation website. Pilot programs can be an effective way to test the effectiveness of concepts and garner support for funding and broader implementation. For example, a pilot of the interregional bus transportation concept may be effective in helping to create the support for a long term investment in the corridor.

## 1.0 Introduction

The Iowa Department of Transportation (DOT) conducted a study to identify and evaluate alternatives for commuter transportation in one of Iowa's major travel corridors, the Interstate 380 (I-380) corridor.

Iowa DOT is interested in alternatives that enhance mobility options and expand transportation options for commuters, reduce wear and tear on the highway system, and decrease traffic congestion along primary corridors. To accomplish this, the Iowa Commuter Transportation Study (ICTS) identified the existing and future commuter needs in the corridor and determined the viability of various commuter transportation alternatives to address those needs.

### 1.1 Study Purpose

The Iowa legislature directed the Iowa DOT to "conduct a study to identify administrative needs, projected demand, necessary capital and operating costs, and public transit service structures including park-and-ride lots, employer or public vanpool programs, and traditional fixed-route transit. The department shall submit a report with findings and recommendations to the general assembly on or before December 15, 2014." To meet this requirement, the ICTS:

- Identified the potential commuter market and needs.
- Assessed existing inter-regional commuter services and system capacity based on projected growth.
- Identified transportation alternatives to address unmet commuter transportation needs.
- Determined required capital and operating costs for the identified alternatives.
- Identified potential funding and financing opportunities.

### 1.2 Study Need

The ICTS was commissioned to address the following needs:

- Eastern Iowa communities depend on one another economically, and improving the transportation system is critical to supporting future growth and access to jobs in the region.
- The Iowa DOT is interested in more transportation options along major corridors to reduce wear and tear on the transportation system and decrease traffic congestion.
- The traffic analyses completed as part of the *I-380 Rural Corridor Feasibility Study* for the 2020 and 2040 traffic volume forecasts indicate that the rural stretch of the I-380 corridor requires expansion to a six-lane freeway by 2020 to continue to operate at the desired Level of Service (LOS) during the a.m. and p.m. peak time periods.
- The explanation included in the Notes on Bills and Amendments for Senate File 2349 stated that the law "Requires the DOT to conduct a study of the I-380 corridor and the traffic volumes between Linn and Johnson counties. The study is to identify the needs of employers, projected demand, capital and operating costs, and determine the pros and cons of various structures associated with a public transit system between the Iowa City and Cedar Rapids metro areas."

### **1.3 Benefits of I-380 Commuter Transportation Improvements**

The I-380 Commuter Transportation Improvements described in Chapter 6 identify transportation options that are intended to reduce single-occupant vehicles (SOVs) in the I-380 corridor and enhance mobility throughout the seven county study area. A new public interregional express bus service and vanpool and carpool program has the potential to reduce SOVs and provide a mobility option for commuters unable to use public transportation. Providing mobility options and reducing SOV commuting has numerous benefits:

#### ***I-380 Traffic Operations***

- Reducing SOV commuting helps meet the objective of helping to reduce congestion on I-380. Reducing congestion has tangible benefits including improving travel time and reduce fuel consumption. Although the shift of commuter trips from SOVs to commuter transportation alternatives is not likely to alleviate the need to expand the capacity of I-380, the improvement is expected to be beneficial.
- Safety along I-380 is an issue. The reduction in SOV commuting will have a positive effect on safety because many of the safety issues are a result of the increased traffic volumes.
- Within the next decade Iowa DOT is expected to embark on major construction along I-380, including the reconfiguration of the system interchange with I-80. The Commuter transportation improvements can be an important part of the mitigation efforts that will be required during the years of construction required for the facility improvements.

#### ***Economic Development***

- Local employers benefit from commuter transportation enhancements by widening the available labor pool. During stakeholder meetings, some employers cited difficulty in attracting workers due to lack of transportation. This barrier can effect a new company's locational decision and may limit existing business's ability to expand.
- Auto commuting over the length of the I-380 corridor can be expensive, which is a factor that can limit an individual's access to employment opportunities.
- The region is promoting itself as Iowa's Creative Corridor. Enhancing commuter transportation in the corridor supports this important economic development strategy.

#### ***Access to Jobs***

- Commuter Transportation Improvements provide equal opportunity for transit-dependent populations including zero and one car households, or for those who can no longer drive including the elderly and disabled. Currently, there are no public interregional commuter transportation options. The Commuter Transportation Improvements will provide greater employment opportunities for transit-dependent residents.

#### ***Environmental***

- Reducing SOVs reduces greenhouse gas emissions and is generally environmentally positive.



## 1.4 Study Area

The ICTS study area includes:

- Study Area: The Eastern Iowa communities within Linn, Johnson, Benton, Jones, Iowa, Cedar and Washington Counties; and
- Detailed Study Area: Assessment and recommendations within the I-380 corridor between Cedar Rapids and Iowa City.

**Figure 1.1: Study Area**



## 1.5 Study Process

The study process followed a five step approach:

- Needs Assessment: What are the region's primary commuter transportation needs as they relate to issues and barriers along the corridor?
- Data collection: Information and facts that informed the study recommendations.
- Develop Alternatives and Evaluate Ideas: Concepts for corridor improvements.
- Draft Solutions: Preferred concepts vetted throughout the study process.
- Final Plan: Document preferred infrastructure improvements and service enhancements, funding and financing strategy and implementation guide.

## 1.6 Public Outreach

The ICTS process involved collecting technical transportation information from the region and evaluating it based on existing and future needs and demands. Balancing this technical information with local knowledge from employers, commuters, and others interested in an improved transportation system requires input and engagement.

Gathering this local knowledge included:

- A series of stakeholder interviews with major employers in the area to help identify demand and opportunities for commuter transportation services.
- A Project Management Team (PMT), comprised of Iowa DOT staff familiar with the corridor and a representative of the East Central Iowa Council of Governments (ECICOG), provided input from the perspective of agencies responsible for transportation in the corridor.
- An Advisory Group made up of 15 transit officials, economic development leaders, and community officials to help the Iowa DOT understand specific community needs and provide input on the potential solutions and recommendations.
- Two online surveys to gather input from the public on their perceptions and desires for commuter transportation options.
- Two public open house meetings to gather input from the public. Public open house #1 provided input on commuter transportation needs. Public open house #2 provided input on potential commuter transportation service enhancements.

## 2.0 Needs Assessment

One of the identified purposes of this study was to determine the unmet commuter transportation needs in the study corridor. A key task to assess was whether the current commuter transportation options adequately meet the community's expectations. A related task was to determine the potential commuter demand for commuter transportation alternatives in the study corridor.

This section assesses commuter needs and demand through an analysis of employment and work trip patterns along with an analysis of population and employment density, age distribution, income, race, one or zero car households, trip origins and destinations and trip purpose and type. Population, employment, age distribution, and travel behavior help define commuter demands based on the characteristics of the population. For the purposes of this study, the analysis of the commuter market focused on work trips. However, other potential commuters in the study area that were analyzed include transit-dependent populations such as seniors, persons with disabilities, school-age children, university/college students and low income individuals.

### 2.1 Factors Affecting Work Trip Demand

The following analyzes potential work trip demand through an analysis of population growth, population density and major activity/employment centers in the study area.

#### 2.1.1 Population Change

As shown in **Table 2.1** below, the study area is growing. Within the past 30 years, most population growth has occurred in Johnson County, particularly in Iowa City, Coralville and North Liberty. The most growth in terms of percent change has occurred in North Liberty, with the largest increase between 2000 and 2010. Linn County is also growing, with significant population increases in Cedar Rapids and Marion. Within the rural counties, population has remained constant.

**Table 2.1: Population Change**

Place	1990	2000	% Change 1990 to 2000	2010	% Change 2000 to 2010	*2013	% Change 2010 to 2013	% Change 2000 to 2013
<b>Study Area Counties</b>								
Linn County	168,767	191,701	14%	211,226	10%	216,111	2%	28%
Johnson County	96,119	111,006	15%	130,882	18%	139,155	6%	45%
Benton County	22,429	25,308	13%	26,076	3%	25,699	-1%	15%
Jones County	19,444	20,221	4%	20,638	2%	20,611	0%	6%
Iowa County	14,630	15,671	7%	16,355	4%	16,330	0%	12%
Cedar County	17,444	18,187	4%	18,499	2%	18,393	-1%	5%
Washington County	19,612	20,670	5%	21,704	5%	22,015	1%	12%
<b>Study Area Cities (Population over 10,000)</b>								
Cedar Rapids	108,772	120,758	11%	126,326	5%	128,429	2%	18%
Marion	20,403	26,294	29%	34,768	32%	36,147	4%	77%
North Liberty	2,926	5,367	83%	13,374	149%	14,971	12%	412%
Coralville	10,347	15,123	46%	18,907	25%	20,092	6%	94%
Iowa City	58,753	62,220	6%	67,862	9%	71,591	5%	22%

Source: US Census Bureau, 1990, 2000, and 2013 Estimates

### 2.1.2 Population Density

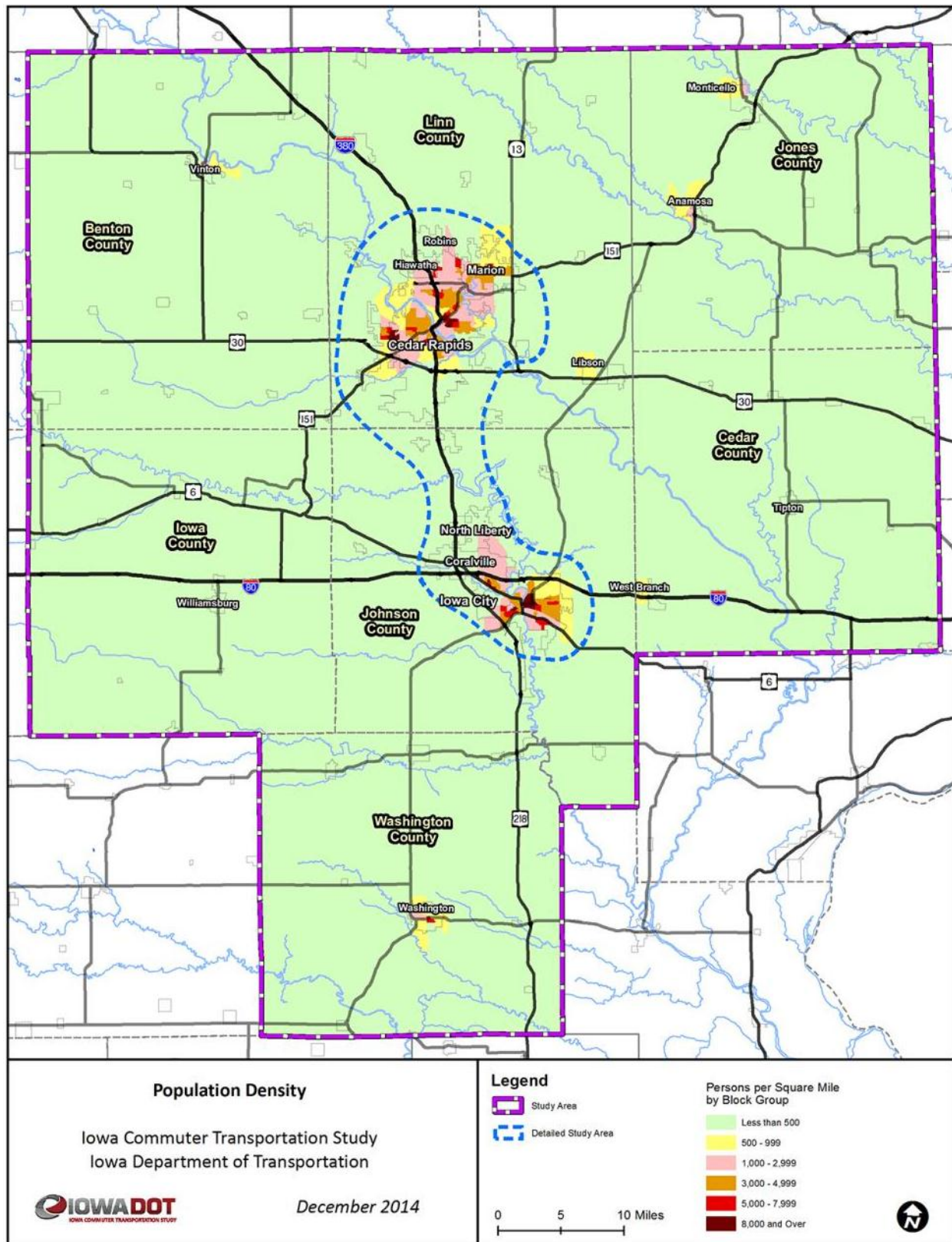
Population density is a critical factor in determining the success of potential public transportation investments. High population densities are critical for traditional fixed route, fixed schedule, transit service by providing the necessary population within walking or convenient driving distance to the stop or collection point. Population densities were assessed for study area counties and major jurisdictions based on 2010 data from the U.S. Census Bureau. Average densities are showing in **Table 2.2** below and by block group in **Figure 2.1** on the following page. As shown in **Figure 1.1**, Iowa City, Coralville, North Liberty, Cedar Rapids and Marion are the only jurisdictions with sufficient density to support fixed-route service. The highest densities within the study area are within the urban neighborhoods surrounding Downtown Iowa City and the University of Iowa Campus. However, there are also high residential densities south of I-80 in Coralville in designated high-density and mixed-use districts and in urban neighborhoods surrounding downtown Cedar Rapids.

**Table 2.2: Population Density**

Place	Square Miles	Total Population	Population Density per square mile
<b>Study Area Counties</b>			
Linn County	717	216,111	301
Johnson County	614	139,155	227
Benton County	716	25,699	36
Jones County	576	20,611	36
Iowa County	586	16,330	28
Cedar County	579	18,393	32
Washington County	569	22,015	39
<b>Study Area Cities (Population over 10,000)</b>			
Cedar Rapids	71	128,429	1,814
Marion	16	36,147	2,251
North Liberty	8	14,971	1,912
Coralville	12	20,092	1,673
Iowa City	25	71,591	2,862

Source: US Census Bureau, 2013 Estimates

Figure 2.1: Study Area Population Density



Source: US Census Bureau, 2010



### 2.1.3 Major Activity Centers

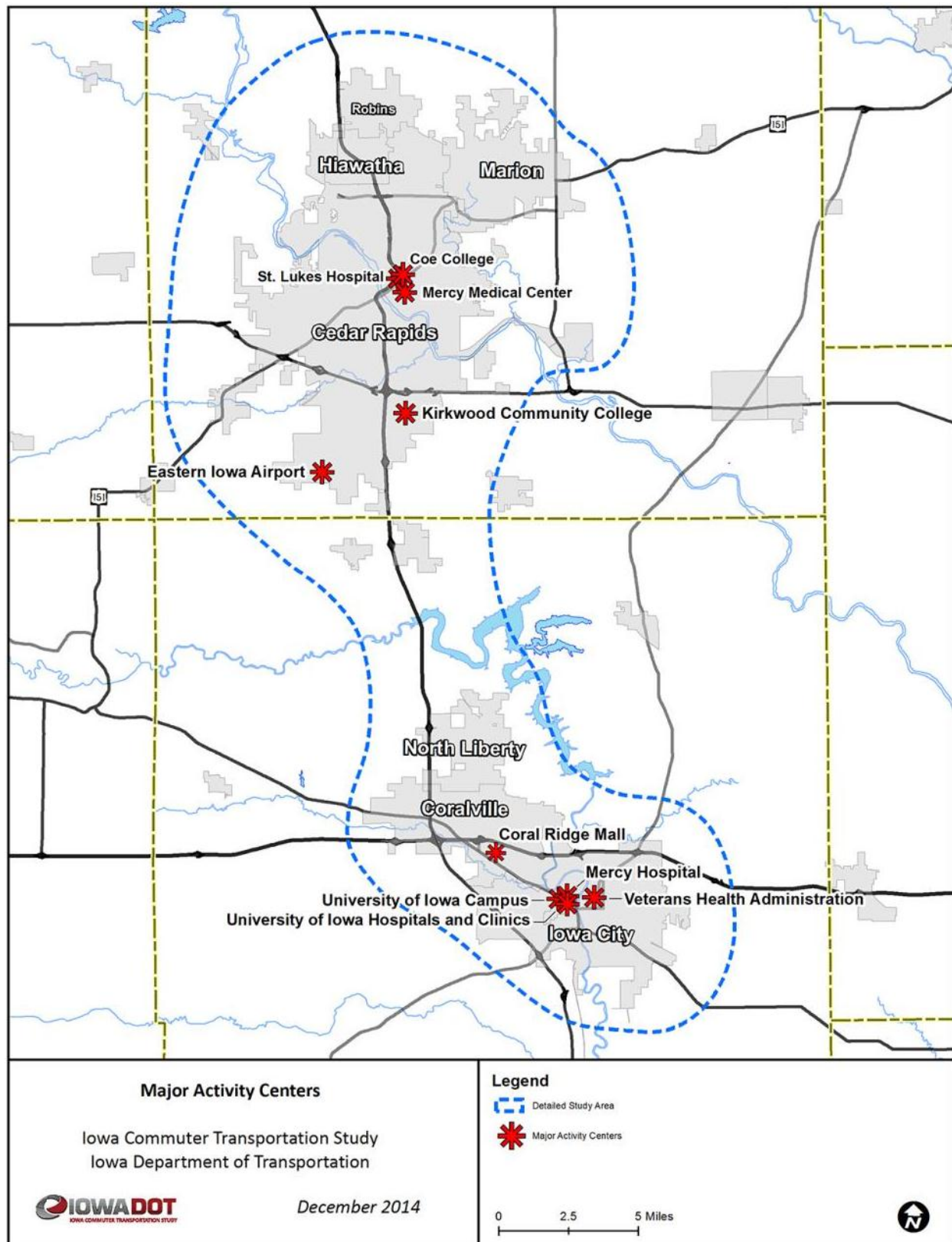
For the purposes of this study, major activity centers are defined as locations within the study area with significant concentrations of employment and/or potential high trip generators such as major attractions or destinations. The major activity centers that are likely to attract regional commuter trips in the study area are shown in **Figure 2.2** on the following page and briefly described below:

- **University of Iowa:** The University of Iowa is a public research university in Iowa City and major economic engine for the state and region, employing approximately 18,000 people and serving 31,000 students. The University of Iowa operates a vanpool, providing transportation for University employees throughout the region to destinations throughout campus. Currently, there are 80 vanpools serving approximately 700 University of Iowa employees.
- **University of Iowa Hospitals and Clinics:** For the year 2013, the University of Iowa Hospitals and Clinics employed 8,139 physicians, dentists, nurses, resident and fellow doctors, and support staff, served an average of 3,920 patients per day, and drew an additional 4,500 visitors per day.<sup>1</sup> Hospital employees are eligible for the University vanpool program.
- **Iowa City Veterans Administration (VA) Hospital:** The VA Hospital is a major regional destination serving more than 184,000 veterans in 50 counties in Eastern Iowa as well as Western Illinois and Northern Missouri and approximately 1,500 employees.
- **Mercy Hospital (Iowa City):** Mercy Hospital employs approximately 1,200 people and provides medical services to patients primarily in Johnson County and the Iowa City metropolitan area.
- **St. Luke's Hospital:** St. Luke's Hospital is one of the largest employers in Cedar Rapids with approximately 3,000 employees and averages 262 patients per day during the week.
- **Coe College:** Coe College is a private liberal arts college in Cedar Rapids with approximately 1,300 full time students, its largest full-time enrollment to date, and approximately 80 academic staff.
- **Mercy Medical Center (Cedar Rapids):** Mercy Medical Center employs approximately 2,200 people and provides medical services to patients primarily in Linn County in the Cedar Rapids Metropolitan area.
- **Eastern Iowa Airport:** The Eastern Iowa Airport is a major regional designation and is served by five airlines, Allegiant Air, American Eagle, Delta Airlines, Frontier Airlines and United Airlines, with non-stop flights to nine cities including Atlanta, Chicago, Denver, Detroit, Las Vegas, Minneapolis/St. Paul, Phoenix/Mesa, Punta Gorda/Ft. Myers, and Tampa/St. Petersburg.
- **Kirkwood Community College:** Kirkwood Community College is a two-year comprehensive community college, located in Cedar Rapids, and serving the seven study area counties with a total credit enrollment of approximately 23,000 students and 1,900 employees.
- **Coral Ridge Mall:** Coral Ridge Mall is a regional shopping mall just south of I-80 in Coralville.

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<sup>1</sup> UHIC Profile, 2013. Note, these employment numbers make up a portion of the 18,000 university employees.

Figure 2.2: Major Activity Centers





### 2.1.4 Major Employers

Fourteen of the top 15 largest employers in the study area, as shown in **Table 2.3** below and **Figure 2.3** on the following page, are in either Linn or Johnson Counties. The exception is Whirlpool, located in Iowa County. The top 25 employers are in four of the seven study area counties.

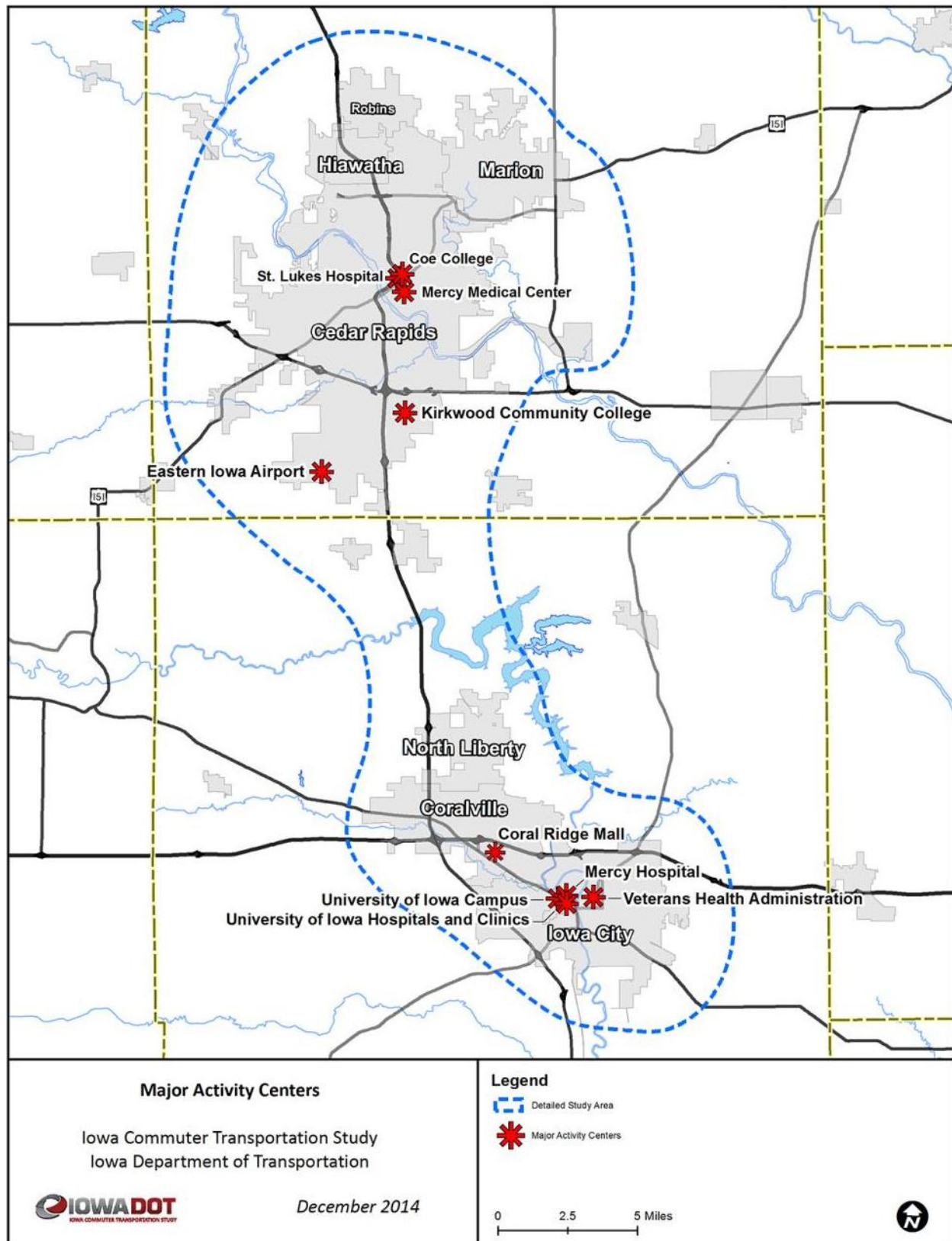
**Table 2.3: Major Employers**

Rank	Company	Employees	Industry	Location
1	University of Iowa (UI)	18,000	Education	Johnson County
2	Rockwell Collins	9,470	Electronic Equipment & Design	Linn and Johnson County
3	UI Hospitals and Clinics <sup>2</sup>	8,139	Healthcare	Johnson County
4	Transamerica	3,872	Insurance/Financial	Linn County
5	St. Luke's Hospital	3,184	Healthcare	Linn County
6	Cedar Rapids School District	2,936	Education	Linn County
7	Mercy Medical Center	2,200	Healthcare	Linn County
8	Whirlpool	2,200	Equipment Manufacturing	Iowa County
9	Kirkwood Community College	1,895	Education	Linn County
10	Iowa City Community School District	1,700	Education	Johnson County
11	Veterans Health Administration	1,562	Healthcare	Johnson County
12	ACT, Inc.	1,243	Education	Johnson County
13	Mercy Iowa City	1,208	Healthcare	Johnson County
14	Pearson Educational Measurement	1,200	Publishing	Johnson County
15	Nordstrom Direct	1,200	Logistics/Distribution	Linn County
16	Quaker Foods & Snacks	1,018	Food Processing	Linn County
17	Linn-Mar Community School District	954	Education	Linn County
18	Yellow Book USA	933	Customer Service	Linn County
19	Alliant Energy	902	Utility	Linn County
20	International Automotive Components	785	Process Manufacturing	Johnson County
21	College Community Schools	775	Education	Linn County
22	Riverside Casino & Golf Resort	757	Entertainment	Washington County
23	Procter & Gamble	700	Process Manufacturing	Johnson County
24	General Dynamics	700	Professional Services	Johnson County
25	General Mills	687	Food Processing	Linn County
26	APAC Customer Service	630	Customer Service	Linn County
27	NextEra Energy	623	Utility	Linn County
28	Verizon Business	604	Customer Service	Linn County
29	Toyota Financial Services	593	Insurance/Financial	Linn County
30	Archer Daniels Midland	500	Bioprocessing/Food Ingredient	Linn County
31	Integrated DNA Technologies	493	Biotechnology	Johnson County
32	GE Capital	484	Insurance/Financial	Linn County
33	SourceMedia Group	477	Media	Linn County
34	RuffaloCODY	475	Information Services	Linn County
35	Oral B	462	Process Manufacturing	Johnson County
36	Centro	366	Process Manufacturing	Johnson County
37	Cargill - Corn Milling	363	Bioprocessing/Food Ingredient	Linn County
38	ALPLA of Iowa	360	Process Manufacturing	Johnson County
39	Penford	242	Bioprocessing/Food Ingredient	Linn County
40	CCB Packaging	205	Process Manufacturing	Linn County
41	Evergreen Packaging	200	Process Manufacturing	Linn County
42	HJ Heinz	200	Food Processing	Linn County
43	Loparex	191	Process Manufacturing	Johnson County
44	DuPont	180	Bioprocessing/Food Ingredient	Linn County
45	Apache Hose & Belting	170	Process Manufacturing	Linn County
46	Ralston Foods	152	Food Processing	Linn County
47	CIVCO Medical Instruments	150	Process Manufacturing	Washington County
48	Pickwick Manufacturing	130	Contract Manufacturing	Linn County
49	International Paper	130	Process Manufacturing	Linn County
50	Engineered Plastic Components	130	Process Manufacturing	Washington County

Source: Cedar Rapids Metro Economic Alliance

<sup>2</sup> UHIC Profile, 2013. Note: Employment totals make up a portion of the 18,000 University of Iowa employees.

Figure 2.3: Major Employers



### 2.1.5 Housing Cost

Housing costs are influential factors in the pattern of work trips. As shown in **Table 2.4** on the following page and **Figure 2.4** on page 13, median home values of owner occupied housing units are higher in the study area compared to the statewide average, with the exception of Jones County and Washington County. Median gross rent is higher in Linn County and Johnson County compared to the statewide average. Coralville, Iowa City and North Liberty have significantly higher median home value of owner occupied housing units and median gross rent than the remainder of the study area cities.

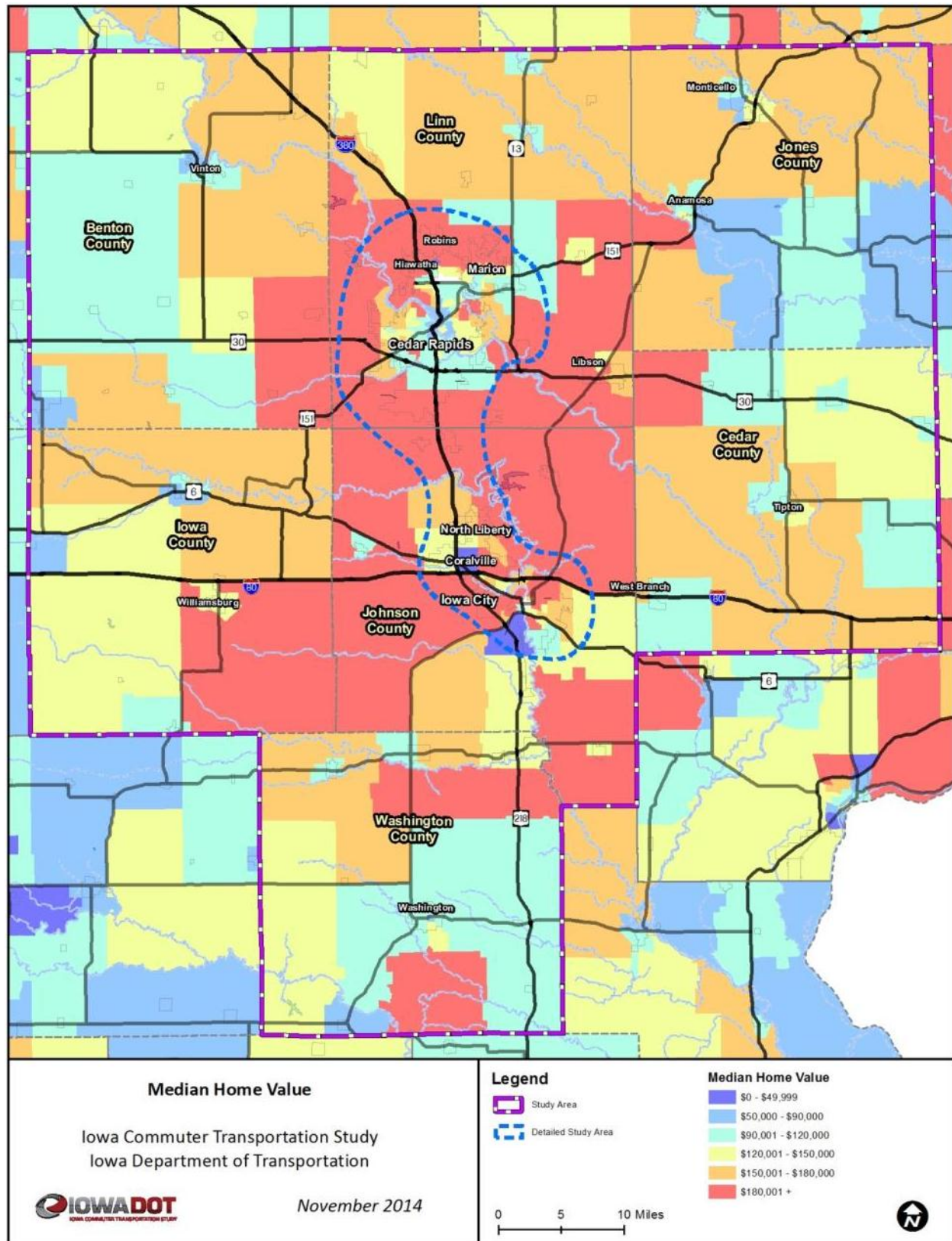
**Table 2.4: Median Home Value and Median Gross Rent**

Place	Median Home Value of Owner Occupied Housing Units	Median Gross Rent
<b>Study Area Counties</b>		
Linn County	\$142,300	\$658
Johnson County	\$183,100	\$789
Benton County	\$130,900	\$586
Jones County	\$119,000	\$576
Iowa County	\$137,300	\$539
Cedar County	\$134,000	\$653
Washington County	\$116,900	\$633
<b>Study Area Cities (Population over 10,000)</b>		
Cedar Rapids	\$131,300	\$680
Marion	\$144,000	\$606
North Liberty	\$155,500	\$874
Coralville	\$186,500	\$743
Iowa City	\$181,000	\$793
<b>Statewide Average</b>		
State of Iowa	\$123,000	\$655

Source: U.S. Census Bureau, 2008-2012 American Community Survey.  
 Highlighted cells meet or exceed the statewide average.

With a high concentration of employment within Iowa City, housing affordability concerns, particularly for lower income workers, may lead individuals to seek more affordable housing options in adjacent counties and communities. This was confirmed in several employer stakeholder interviews and accounts for the distribution of regional work trips into Iowa City.

Figure 2.4: Median Home Value of Owner Occupied Housing Units





### 2.1.6 Zero and One Car Households

For some, the choice of not owning a vehicle is a preference or lifestyle choice. In some communities, vehicle ownership may be very expensive or inconvenient and there may be ample transportation alternatives including public transit, walking or biking. However, a majority of one and zero car households face economic constraints that make financing, licensing, insurance, and maintenance difficult. Zero-vehicle households are at structural disadvantage in competing for jobs. According to a 2011 report by the Brookings Institution, approximately 7.5 million households in the nation's largest metropolitan areas do not have access to an automobile. This report also notes that the U.S. has built 655,000 roadway lane miles of highways since the 1980s, enabling development farther out and increasing distances between destinations making it even more difficult to provide people with access to public transit.<sup>3</sup> For this reason, an assessment of one and zero car households is an important factor for evaluating potential future transit investments within the study area.

**Table 2.5: Zero and One Car Households**

Place	Zero Vehicles	Percent	One Vehicle	Percent	Two or More Vehicles	Percent	Total
<b>Study Area Counties</b>							
Linn County	5,441	6.4%	26,956	31.5%	53,257	62.2%	85,654
Johnson County	3,657	6.9%	18,870	35.7%	30,299	57.4%	52,826
Benton County	379	3.7%	2,133	20.9%	7,718	75.4%	10,230
Jones County	351	4.3%	1,875	23.1%	5,883	72.5%	8,109
Iowa County	209	3.1%	1,620	24.1%	4,888	72.8%	6,717
Cedar County	316	4.2%	1,729	22.8%	5,549	73.1%	7,594
Washington County	579	6.5%	2,458	27.5%	5,889	66.0%	8,926
<b>Study Area Cities (Population over 10,000)</b>							
Cedar Rapids	4,017	7.6%	18,217	34.6%	30,380	57.7%	52,614
Marion	800	5.7%	4,467	31.9%	8,752	62.4%	14,019
North Liberty	178	3.0%	2,131	36.5%	3,530	60.5%	5,839
Coralville	387	5.0%	2,907	37.6%	4,446	57.4%	7,740
Iowa City	2,673	9.8%	11,418	41.8%	13,198	48.4%	27,289
<b>Statewide Total/Average</b>							
State of Iowa	71,568	5.8%	366,366	29.9%	785,575	64.2%	1,223,509

Source: U.S. Census Bureau, 2008-2012 American Community Survey  
 Highlighted cells meet or exceed the statewide average.

As shown in **Table 2.5** above, the highest concentrations of zero and one care households are in Cedar Rapids and Iowa City with fixed-route transit service providing local trips. The existing interregional commuter services, the University of Iowa vanpools and vRide, provide just fewer than 800 daily trips,

<sup>3</sup> *Transit Access and Zero-Vehicle Households*, Adie Tomer, Brookings Institution Metropolitan Policy Program, 2011

and the University vanpools are limited to University employees. Currently there are no public regional transportation services for work trips limiting economic opportunities for zero and one car households.

### 2.1.7 College/University Students

One factor that makes the study area unique from other regions is the number of college and university students. A large portion of the students go the University of Iowa in Iowa City, however, a significant number of students also attend Coe College, Kirkwood Community College and Mount Mercy University in Cedar Rapids. On urban campuses like the University of Iowa, where parking is limited and can be expensive, many students do not drive. Also, due to the high housing costs in Iowa City and the surrounding area, many students may choose housing away from campus.

**Table 2.6: College/University Students**

Place	Total Enrolled in College/University	Percent of Population
<b>Study Area Counties</b>		
Linn County	16,230	7.96%
Johnson County	30,064	23.76%
Benton County	1,276	5.07%
Jones County	797	3.99%
Iowa County	677	4.29%
Cedar County	645	3.62%
Washington County	876	4.20%
<b>Study Area Cities (Population over 10,000)</b>		
Cedar Rapids	10,880	8.91%
Marion	1,954	5.86%
North Liberty	1,218	9.87%
Coralville	2,394	13.32%
Iowa City	24,851	37.45%
<b>Statewide Average</b>		
Statewide	229,105	7.82%

Source: U.S. Census Bureau, 2008-2012 American Community Survey  
 Highlighted cells meet or exceed the statewide average.

Not surprising, as shown in **Table 2.6** above, Iowa City has the highest percentage of students in the study area, followed by Coralville, North Liberty and Cedar Rapids. Cambus provides transportation services to students on campus and throughout the University of Iowa campus. Through U-pass, students also have access to a universal pass for Iowa City and Coralville Transit which also serves North Liberty. This pass may be subsidized if the student does not have a parking permit. However, for trips outside of the metropolitan area, there are limited options. Additionally, the University of Iowa vanpool is available for University of Iowa employees, not students. There is a carsharing option in Iowa City through Zipcar; however, this service is geared to serve infrequent trips. In Cedar Rapids, Kirkwood Community College has a high number of commuters in the region with no dedicated interregional commuter transportation options.

## 2.2 Potential Demand

A key objective of the study is to determine the potential demand for a dedicated interregional commuter-oriented public transportation service on the I-380 corridor. By determining the potential demand, the study team is able to develop a set of reasonable public transportation options to address specific needs. It should be noted that this quantitative analysis was refined throughout the study based on discussions with major stakeholders in the study area, information gathered from the surveys and input from the Public Workshops.

### 2.2.1 Commuter Travel Patterns

To determine the potential demand, it is necessary to have a thorough understanding of commuter travel patterns along the I-380 corridor including means of transportation to work, average travel time to work, trip purpose and type, and analysis of major origins and destinations.

#### *Means of Transportation to Work*

**Table 2.7** below shows means of transportation to work within the study area. This data provides important on existing mode share for commuters traveling within the study area. Although driving alone accounts for a vast majority of the existing trips, compared to the statewide average, there are a relatively high percentage of carpool trips in Iowa County, Cedar County, Washington County, North Liberty and Coralville and a high percentage of public transportation trips in Johnson County, Coralville and Iowa City.

**Table 2.7: Means of Transportation to Work**

Place	Car, truck or van		Public Transportation	Bicycle/ Walked	Other	Worked at Home
	Drove Alone	Carpooled				
Study Area Counties						
Linn County	82%	9%	1%	3%	1%	4%
Johnson County	67%	11%	6%	12%	1%	4%
Benton County	80%	9%	0%	4%	3%	5%
Jones County	82%	9%	0%	3%	1%	6%
Iowa County	74%	16%	0%	5%	0%	6%
Cedar County	79%	13%	0%	3%	0%	5%
Washington County	73%	14%	1%	4%	1%	7%
Study Area Cities (Population over 10,000)						
Cedar Rapids	82%	9%	1%	3%	1%	3%
Marion	85%	8%	1%	2%	1%	4%
North Liberty	80%	11%	1%	2%	2%	4%
Coralville	73%	13%	8%	3%	1%	3%
Iowa City	57%	10%	10%	19%	1%	3%
Statewide Average						
State	79%	10%	1%	4%	1%	5%

Source: U.S. Census Bureau, 2008-2012 American Community Survey  
 Highlighted cells meet or exceed the statewide average



### *Travel Time to Work in Minutes*

**Table 2.8** below provides the average commuter travel times to work in the corridor. Within Linn and Johnson Counties, commuting times are fairly consistent, with a majority of commuters spending between 10 to 24 minutes traveling. Within the remainder of the rural counties, almost 50 percent of the commuter trips are longer than 25 minutes. Of the major cities, North Liberty and Marion have the longest average commute times.

**Table 2.8: Travel Time to Work in Minutes**

Place	Less Than 10	10 to 14	15 to 19	20 to 24	25 to 29	30 to 44	45 or Higher
<b>Study Area Counties</b>							
Linn County	19%	22%	21%	16%	6%	11%	6%
Johnson County	18%	21%	22%	16%	6%	12%	4%
Benton County	22%	8%	9%	11%	9%	28%	12%
Jones County	28%	12%	10%	8%	4%	20%	19%
Iowa County	28%	12%	11%	11%	5%	21%	12%
Cedar County	22%	12%	8%	13%	6%	24%	15%
Washington County	29%	11%	10%	10%	7%	22%	11%
<b>Study Area Cities (Population over 10,000)</b>							
Cedar Rapids	20%	25%	22%	13%	4%	10%	5%
Marion	17%	15%	17%	18%	8%	9%	16%
North Liberty	13%	9%	20%	27%	9%	15%	6%
Coralville	17%	20%	23%	16%	7%	12%	6%
Iowa City	22%	26%	24%	12%	4%	9%	3%
<b>Statewide Average</b>							
State of Iowa	25%	19%	17%	14%	5%	12%	7%

Source: U.S. Census Bureau, 2008-2012 American Community Survey  
 Highlighted cells meet or exceed the statewide average

The travel time to work data indicates on average, a majority of study area work trips are within 20 minutes. However, a significant amount of work trips are longer than 20 minutes indicating a willingness to drive longer distances to work. It should be noted that due to factors such as congestion, travel time does not necessarily equate to location and distance.

### *Intra and Interregional Trips*

**Table 2.9** provides a generalized breakdown of employment travel patterns in the study area. On average, a majority of commuter employment travel occurs within the County or City of origin; however, there are some notable exceptions. In Benton and Cedar Counties, a majority of employment travel is out of county. In Marion, North Liberty and Coralville, a vast majority of employment trips are outside of the city of origin.

**Table 2.9: Employment Travel Patterns**

Place	Working Within	Percent Within	Working Outside	Percent Outside
<b>Study Area Counties</b>				
Linn County	98,914	90%	10,505	10%
Johnson County	62,614	87%	9,743	13%
Benton County	4,934	38%	8,059	62%
Jones County	5,427	56%	4,326	44%
Iowa County	5,431	63%	3,137	37%
Cedar County	4,226	44%	5,355	56%
Washington County	6,651	60%	4,500	40%
<b>Study Area Cities (Population over 10,000)</b>				
Cedar Rapids	50,313	76%	15,599	24%
Marion	4,683	26%	13,094	74%
North Liberty	1,050	13%	7,342	87%
Coralville	2,701	27%	7,428	73%
Iowa City	29,598	79%	7,958	21%

Source: U.S. Census Bureau, 2008-2012 American Community Survey  
 Highlighted cells meet or exceed the statewide average

### Major Origins and Destinations and Commuter Patterns

As part of the analysis of commuter demand leading to the identification of transportation needs, a matrix of commuter origins and destinations was developed for the study area using 2006-2010 Census Transportation Planning Package (CTPP) data. The CTPP is a set of special tabulations designed by transportation planners using large sample surveys conducted by the Census Bureau. The CTPP uses the American Community Survey (ACS) sample data. This data is available by census tracts, but the tracts were aggregated into a large area for data presentation. **Figure 2.5** on the following page, **Figures 2.6 to 2.12** on pages 22 and 22, and **Table 2.11** on page 21 show commuter trips between the select origins and destinations. There is a relatively low level of commuting between the Cedar Rapids and Iowa City urban areas. According to CTPP data, there are approximately 4,159 commuters in both directions representing less than 10 percent of the total workers in these urban areas. **Table 2.10** below shows information on commuters between the Cedar Rapids and Iowa City metropolitan areas.

**Table 2.10: Cedar Rapids Metropolitan Area – Iowa City Metropolitan Area Commuters**

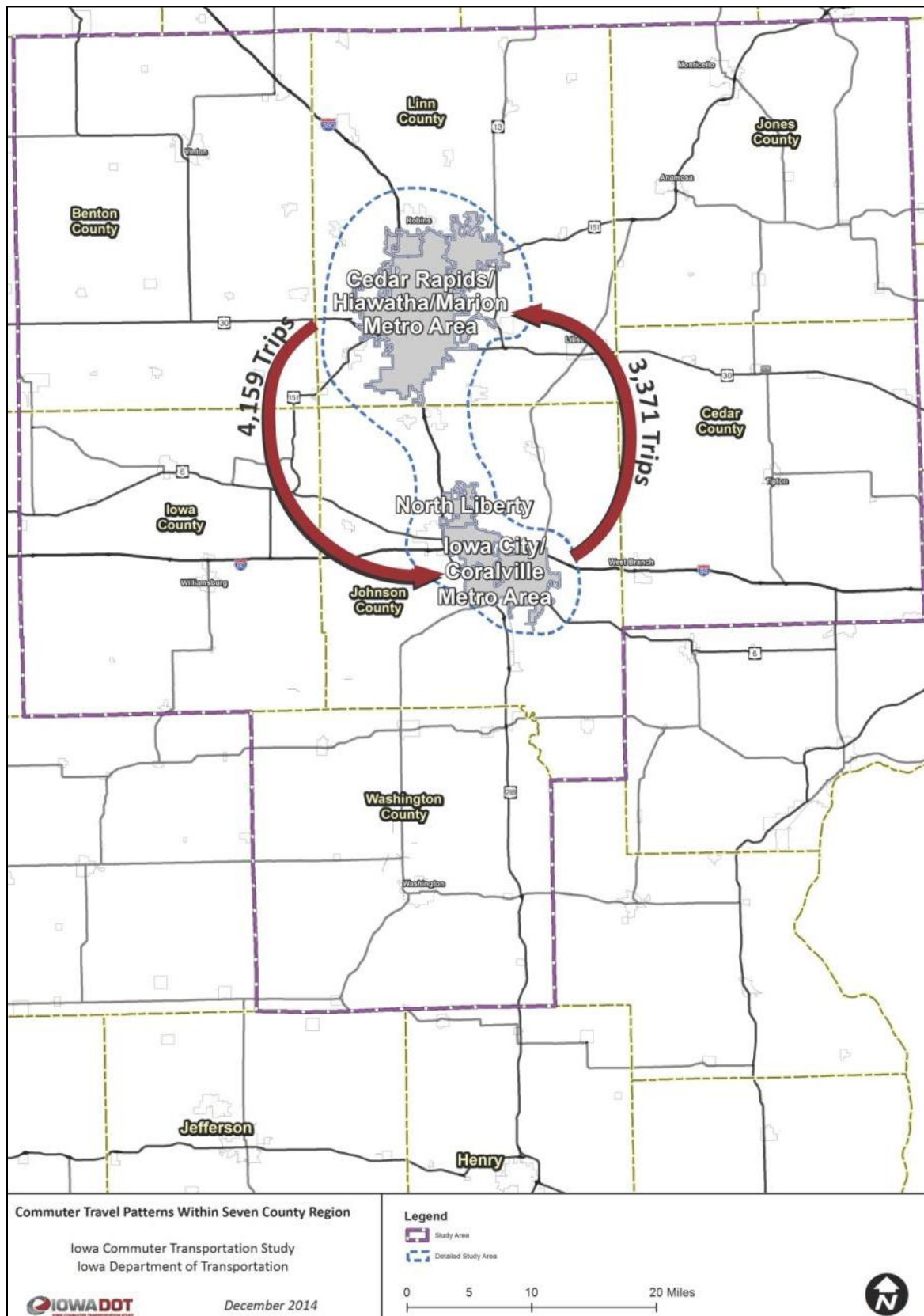
Origin Area	Destination	Total Commuters	% of Origin Workers	% of Destination Workers
Cedar Rapids/ Hiawatha/ Marion	Iowa City/Coralville/ North Liberty	4,159	5%	6%
Iowa City/Coralville/ North Liberty	Cedar Rapids/Hiawatha/ Marion	3,371	5%	3%

Source: U.S. Census Bureau, American Community Survey 2006-2010 5-year samples

As shown, five percent of the total employed persons residing in the Cedar Rapids Metropolitan Area work in the Iowa City Metropolitan Area, and represent six percent of the employment in the Iowa City Metropolitan Area. The percentages are similarly low for the Iowa City Metropolitan Area to Cedar Rapids Metropolitan Area commute.

However, the total number of commuter trips may be significant. There are approximately 7,530 commuters both ways and most of these commuters are likely to be traveling during the peak periods using I-380.

Figure 2.5: Major Commuter Trip Patterns

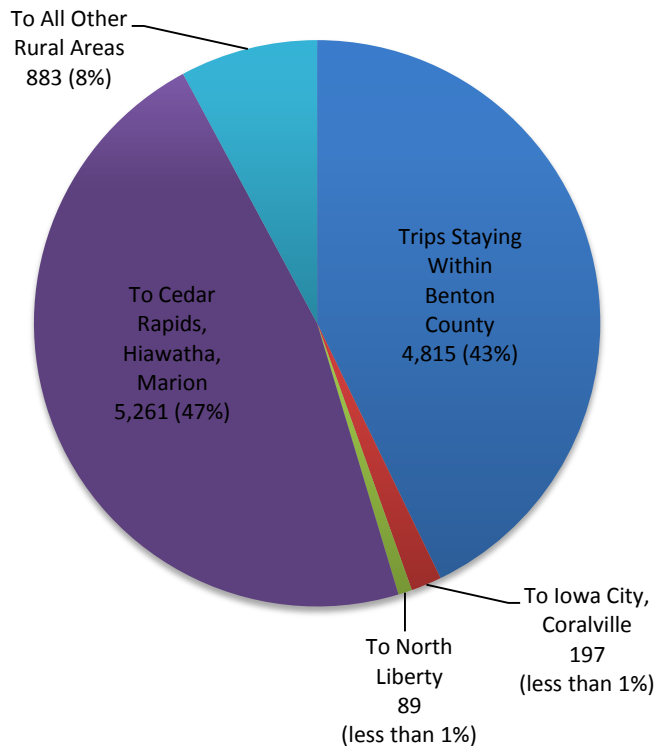
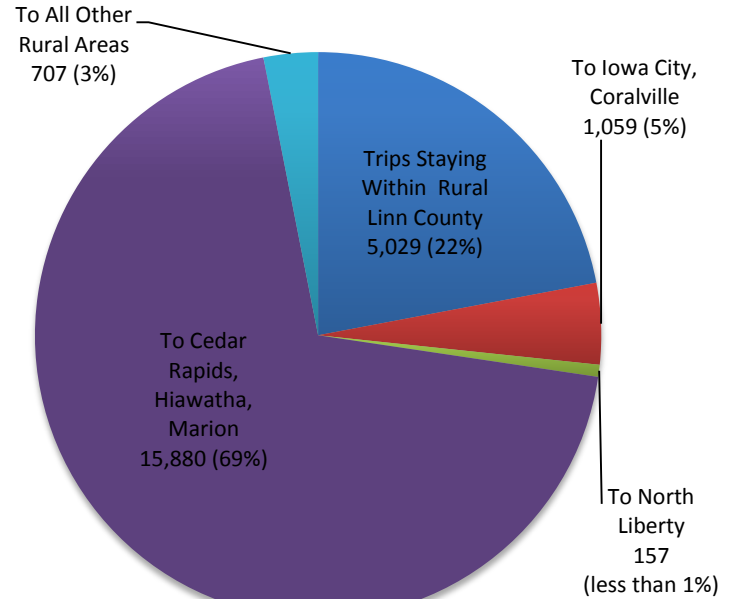
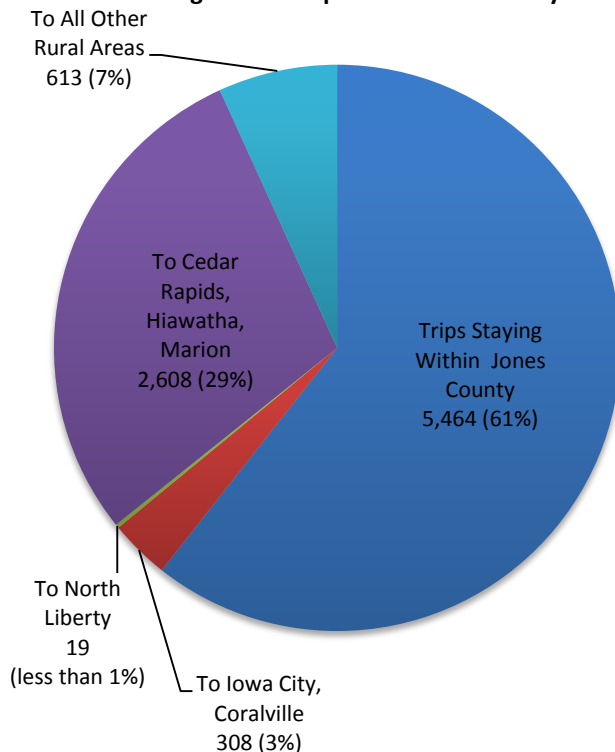
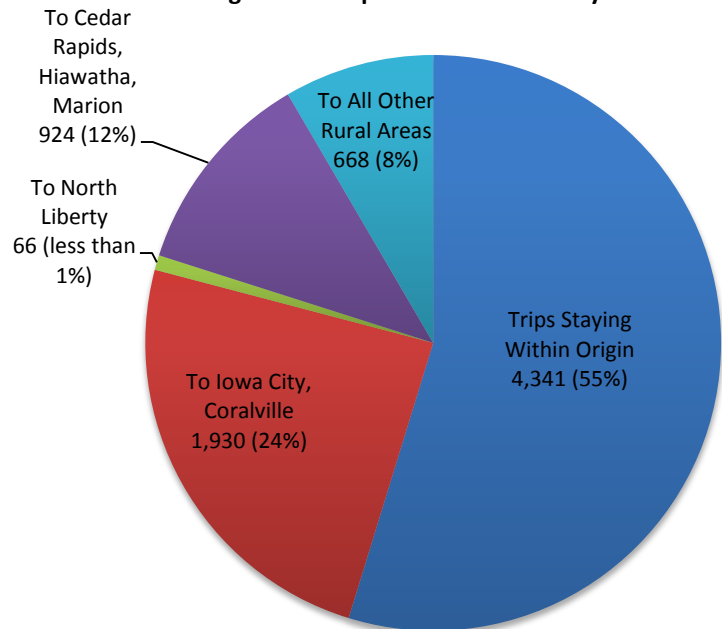


**Table 2.11: Major Origins and Destinations**

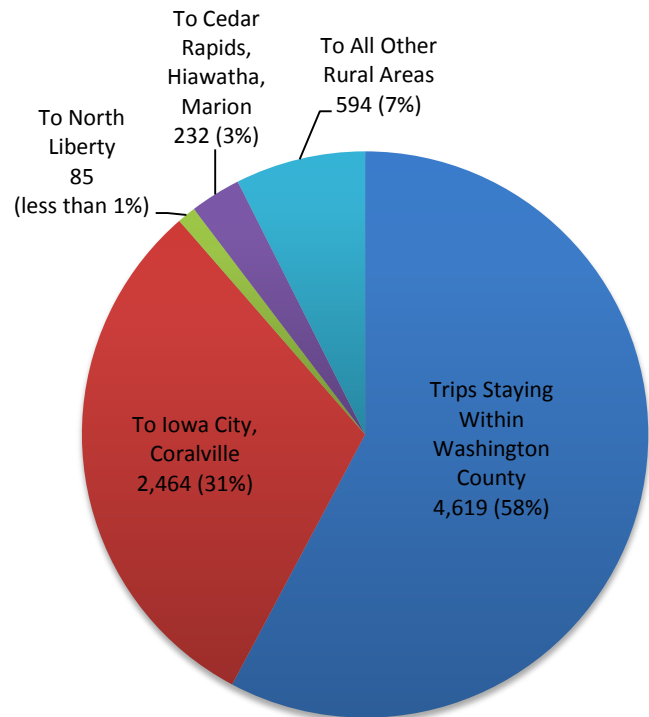
Origins & Destinations		Destinations										
		Total Origin Trips	Benton County	Cedar County	Iowa County	Iowa City, Coralville	North Liberty	Johnson County	Jones County	Cedar Rapids, Hiawatha, Marion	Linn County	Washington County
Origins	Iowa City, Coralville	45,057	20	195	24	38,585	669	2,867	14	2,267	219	197
	North Liberty	6,273	0	44	0	3,841	810	324	15	1,104	125	10
	Rural Johnson County	16,000	8	98	52	8,326	767	3,449	54	2,885	294	67
	Cedar Rapids, Hiawatha, Marion	81,400	374	49	69	3,624	535	526	356	71,542	4,300	25
	Rural Linn County	22,832	206	28	14	1,059	157	219	240	15,880	5,029	0
	Benton County	11,245	4,815	8	109	197	89	65	4	5,261	697	0
	Cedar County	7,929	0	4,341	0	1,930	66	236	142	924	286	4
	Iowa County	5,394	103	18	2,866	1,376	84	205	0	616	92	34
	Jones County	9,012	20	101	4	308	19	38	5,464	2,608	450	0
	Washington County	7,994	0	4	8	2,464	85	555	19	232	8	4,619
	Total	213,136	5,546	4,886	3,146	61,710	3,281	8,484	6,308	103,319	11,500	4,956

Source: U.S. Census Bureau, American Community Survey 2006-2010 5-year samples

Shaded cells indicate the trip interchanges that are of primary significance to the I-380 corridor.

**Figure 2.6: Trips from Benton County**

**Figure 2.7: Trips from Rural Linn County**

**Figure 2.8: Trips from Jones County**

**Figure 2.9: Trips from Cedar County**


**Figure 2.11: Trips from Washington County**



Destination	Percentage	Count
Trips Staying Within Iowa County	53%	2,866
To Cedar Rapids, Hiawatha, Marion	11%	616
To All Other Rural Areas	8%	452
To Iowa City, Coralville	26%	1,376
To North Liberty	2%	84



## 2.3 Survey #1: Needs

As part of the ICTS process, an electronic survey was conducted to better understand the commuter transportation needs related to work trips in the study area. The survey was available from September 15 through October 12, 2014, and 619 surveys were completed. Two results worth noting include: 61 percent of respondents indicated they might use a form of public transportation-carpool/vanpool, public bus transportation. 86 percent of respondents said they may be willing, depending of the type of revenue generating approach, to support a future increase in public funding for inter-regional public transportation improvements. Survey #2, Public Transportation Alternatives was completed to evaluate options and is summarized in **Section 2.4** on page 32. For a detailed breakdown of Survey #1 results, see **Appendix A**.

Other key highlights of the survey results include:

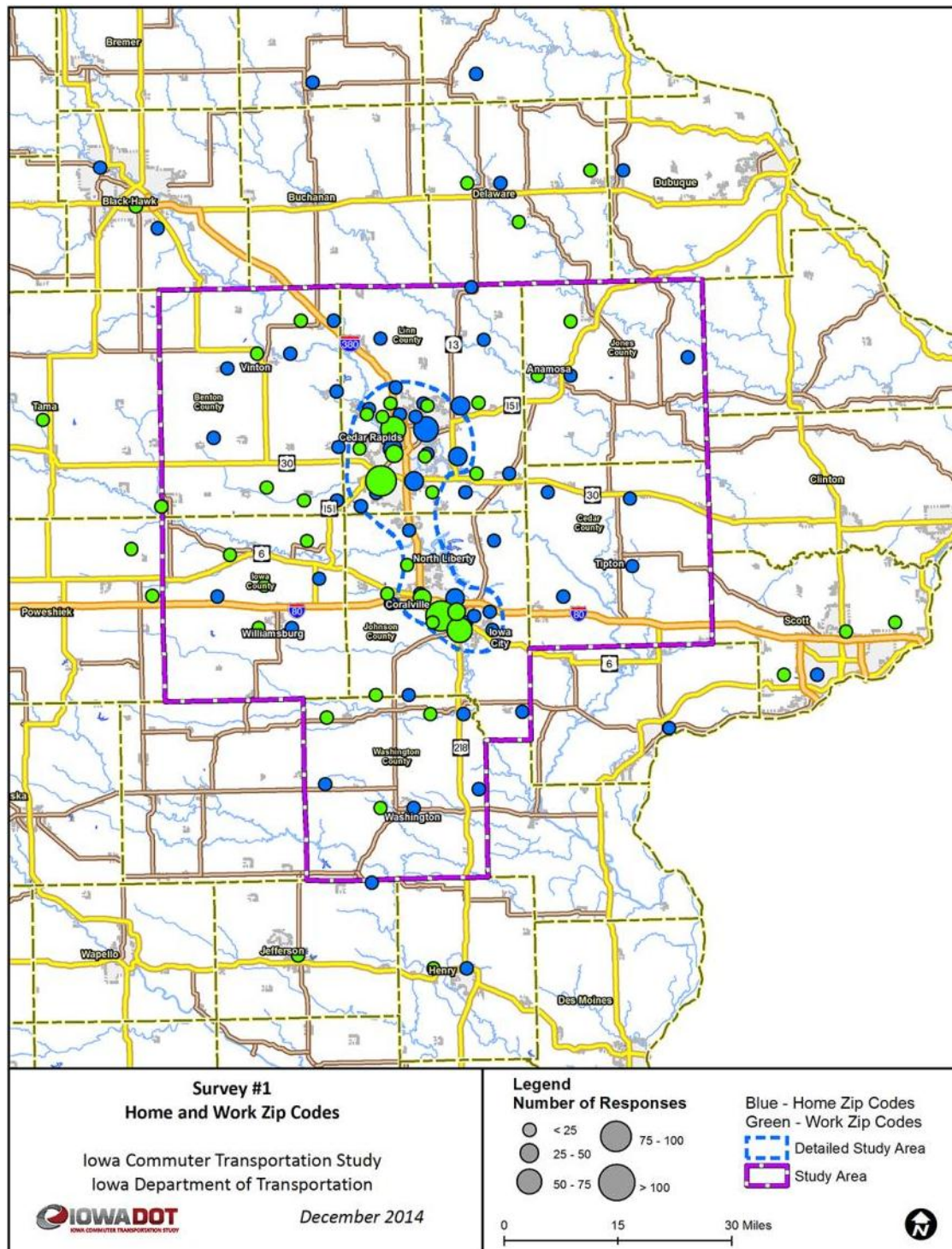
- 89 percent of respondents commute alone to work.
- 82 percent of respondents work a traditional Monday through Friday 8 am to 5 pm schedule.
- 63 percent of respondents travel 21 or more minutes in their commute.
- 40 percent of respondents travel 21 miles or more every day.
- Increased congestion and safety are the top two existing transportation concerns.
- 93 percent of respondents think improvements are needed to the I-380 corridor.
- 57 percent of respondents indicated they would use public transportation options if there were more convenient options available.
- 40 percent of respondents indicated an increase in the price of fuel would cause them to use public transportation options.
- 45 percent of respondents indicated that improved frequency was a critical factor in their likelihood to use public transportation options.
- 61 percent of respondents have access to free parking at their place of employment.
- 65 percent of respondents would be willing to by \$7 or less for daily round trip service between Cedar Rapids and Iowa City.
- 85 percent of respondents have two or more people of legal driving age and two or more cars in their household.

The following pages provide a summary of the Survey #1 responses.

### 2.3.1 Home and Work Location

Home and work zip code locations are identified in **Figure 2.13** below. Although people live throughout the study area, shown by the dotted purple line, the ZIP codes with the highest density of home and work locations are within the primary study area, shown by the dotted blue line.

**Figure 2.13: Home and Work Zip Codes**



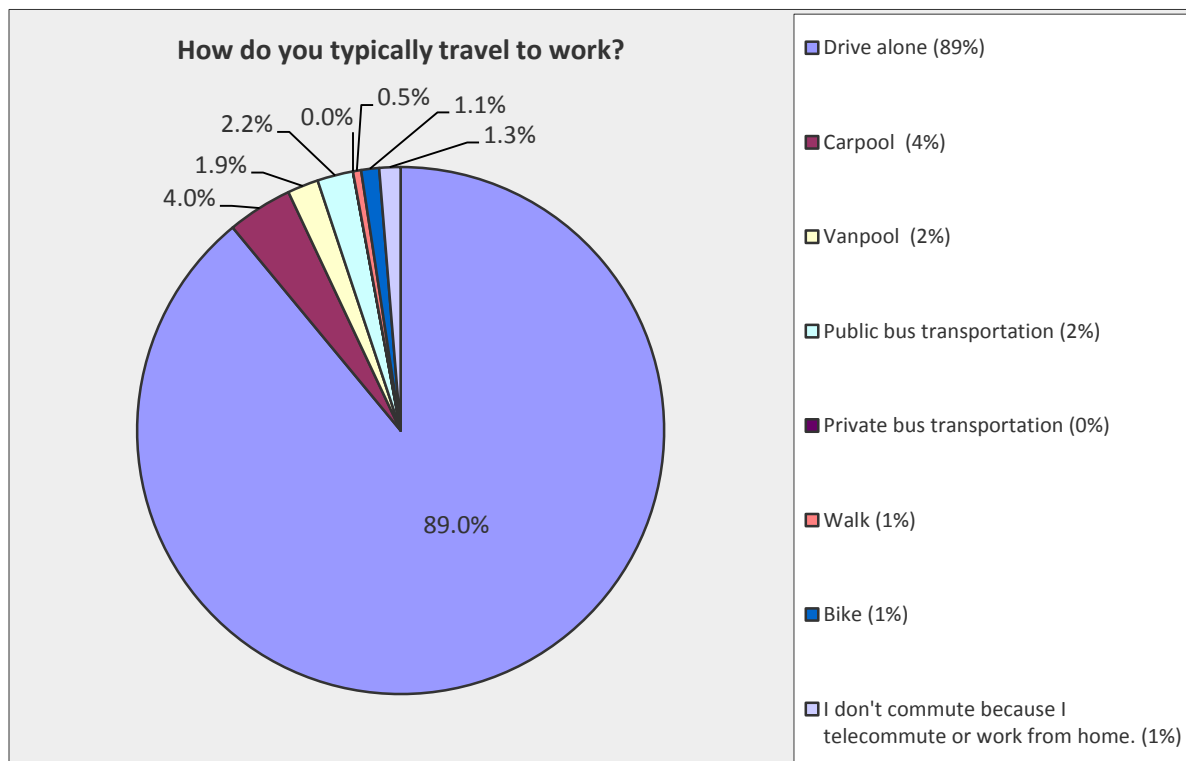
Reponses to the survey covered 66 different ZIP Codes. The top ZIP Code response areas with 40 or more responses were:

Home—52317 (166), 52402 (56), 52404 (48), 52403 (41), 52302 (40) Work—52404 (100), 52242 (80), 52402 (66), 52240 (64) 522401 (46), 52241 (40).

### 2.3.2 Travel to Work

As shown in **Figure 2.14** below, a majority of the individuals that responded to the survey work Monday through Friday, 8am to 5pm, and drive alone. 89 percent of respondents drive alone with 82 percent making that drive during the standard work week. Of those that do use alternative transportation options, carpooling is the most used mode. 63 individuals, or 13 percent, stated they have used alternative means of transportation but do not use currently; 9 percent are regular users of alternative transportation options, 5 percent use 2-4 times per week and 6 percent use 1-2 times per month.

**Figure 2.14: Home and Work Zip Codes**



### 2.3.3 Travel to Time to Work

Over half of the respondents listed their daily drive to work as taking more than 20 minutes, with 35 percent taking over half an hour. In mileage, 40 percent of the people drive over 20 miles to work each way. Most individuals do not make any stops on the way to work. If they do, the reasons are typically to drop children off or to run errands.

Figure 2.15: Travel Time to Work

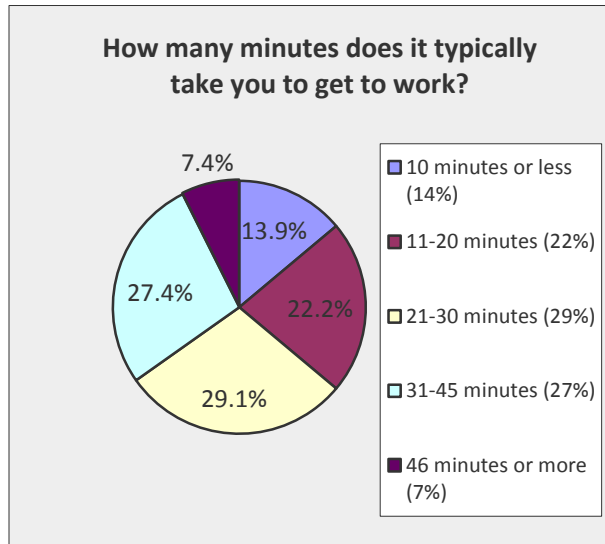
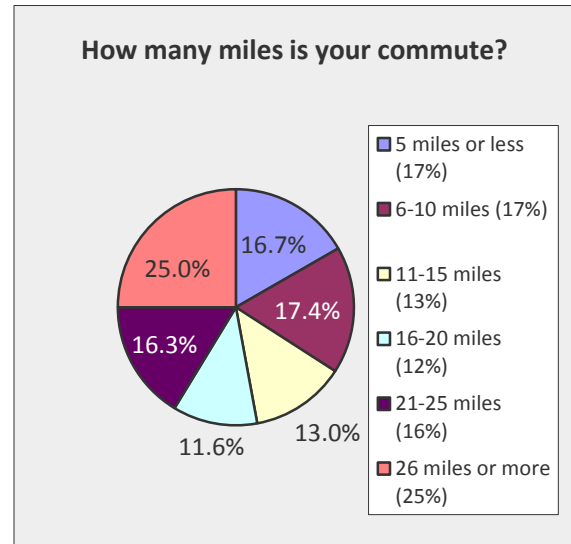


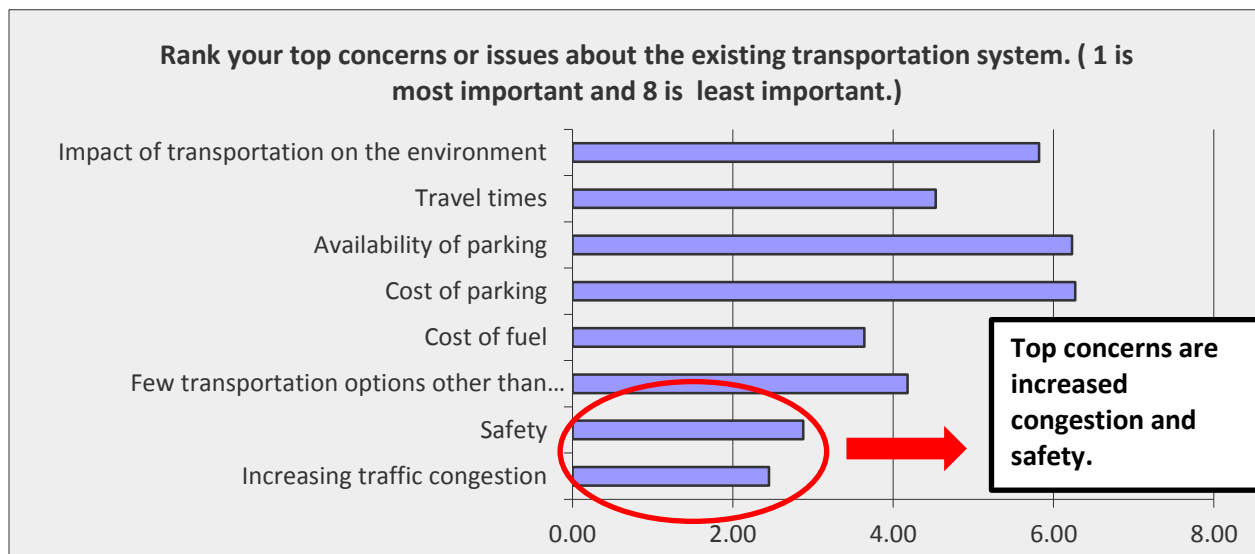
Figure 2.16: Commute Miles



### 2.3.4 Concerns with Existing Transportation System

When asked to rank top concerns about the existing transportation system, “Increasing traffic congestion,” was ranked number one by 37 percent of respondents; 64 percent ranked this as either the number 1 or 2 concern. “Safety” followed as the second top concern with 28 percent listing as a number one concern and 26 percent ranked as the number two concern.

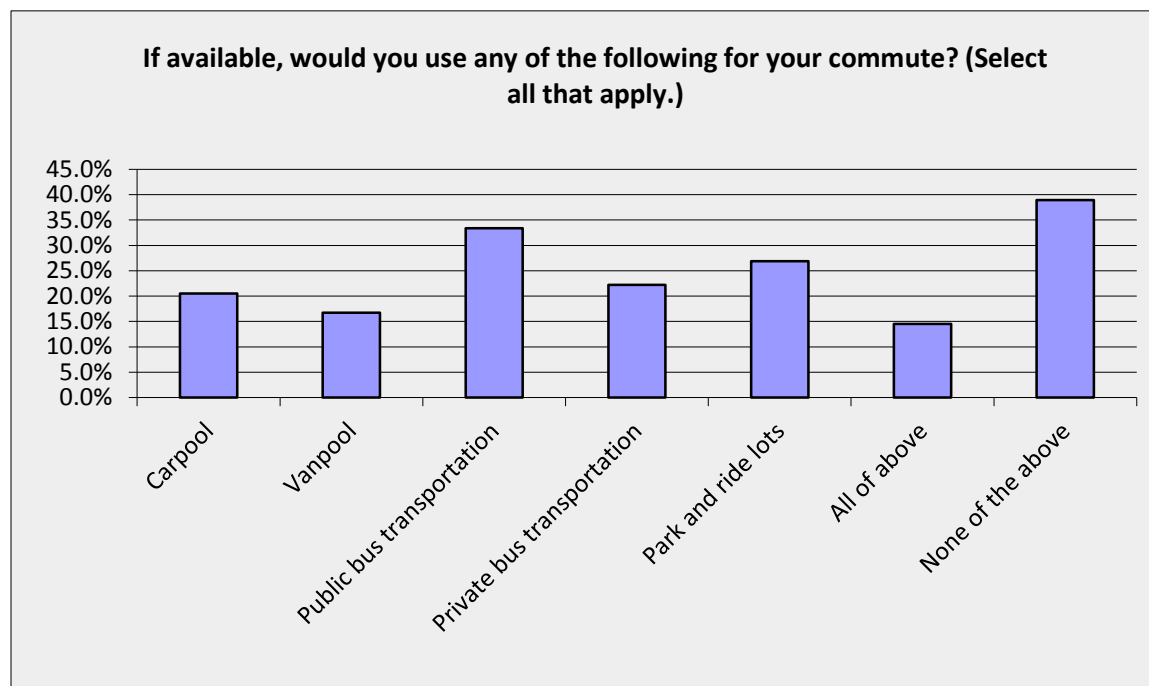
Figure 2.17: Concerns with Existing Transportation System



### 2.3.5 Means of Transportation to Work

When asked to identify other concerns not listed above, respondents indicated that they would like to see improved public transportation, more affordable transportation and better bus schedules and routes to accommodate those in rural areas. A number of respondents would also like to see better bicycle routes.

**Figure 2.18: Means of Transportation to Work**



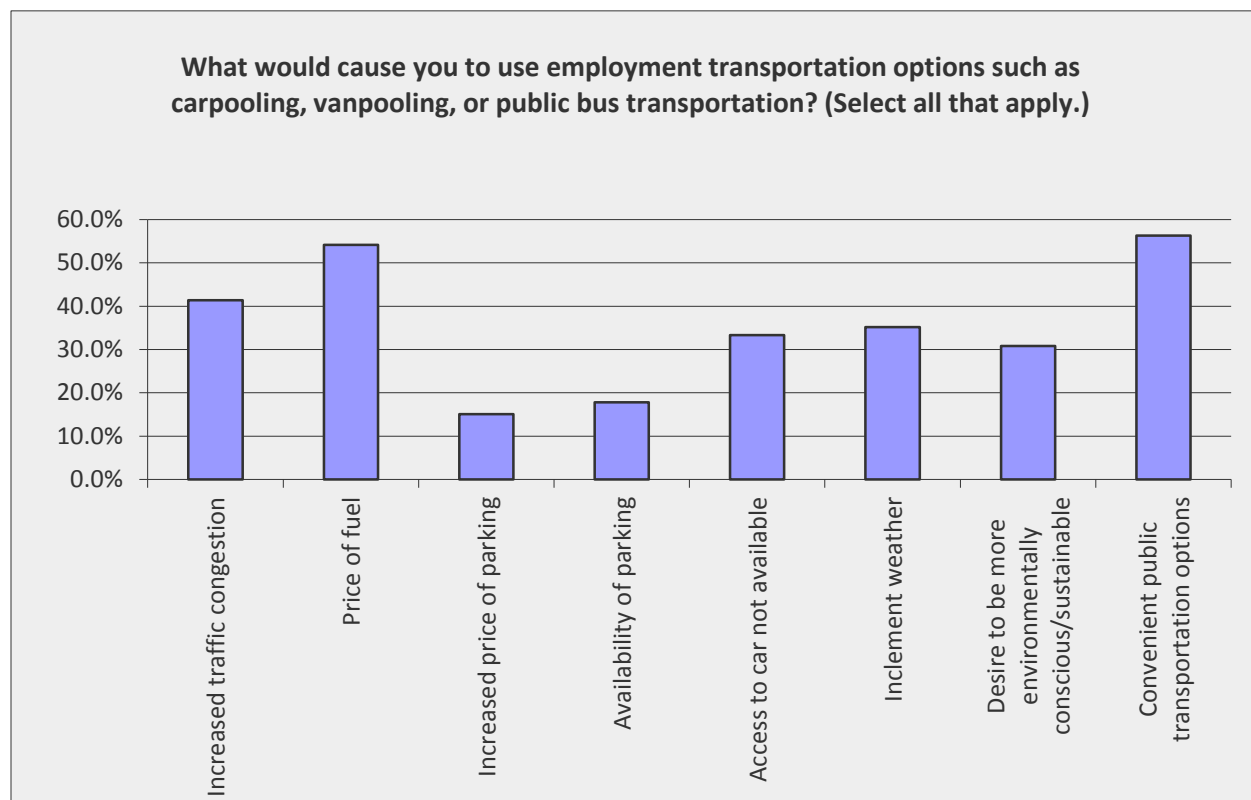
Approximately 93 percent of respondents agree that there is a need for commuter transportation improvements along the I-380 corridor. A third of those surveyed said they would use public bus transportation, 22 percent would take advantage of private buses and 20 percent would carpool; while these numbers may seem low compared to those who prefer to drive alone, even a 10 percent mode split for public transportation options would be significant in the corridor.

Another alternative the public would like to see is lane/capacity expansion, with 70 percent of responders interested in this improvement. Approximately 70 respondents noted that they would like to see a train/passenger rail or light rail type of option.

### 2.3.6 Transportation Choices

Two of the primary motivators that would encourage people to use public transportation are the “convenient public transportation options” and the “price of fuel”. Over half of the respondents chose these options, along with 42 percent choosing “increased traffic congestion” as a reason to use commuter transportation services.

**Figure 2.19: Reasons to Consider Transportation Options**

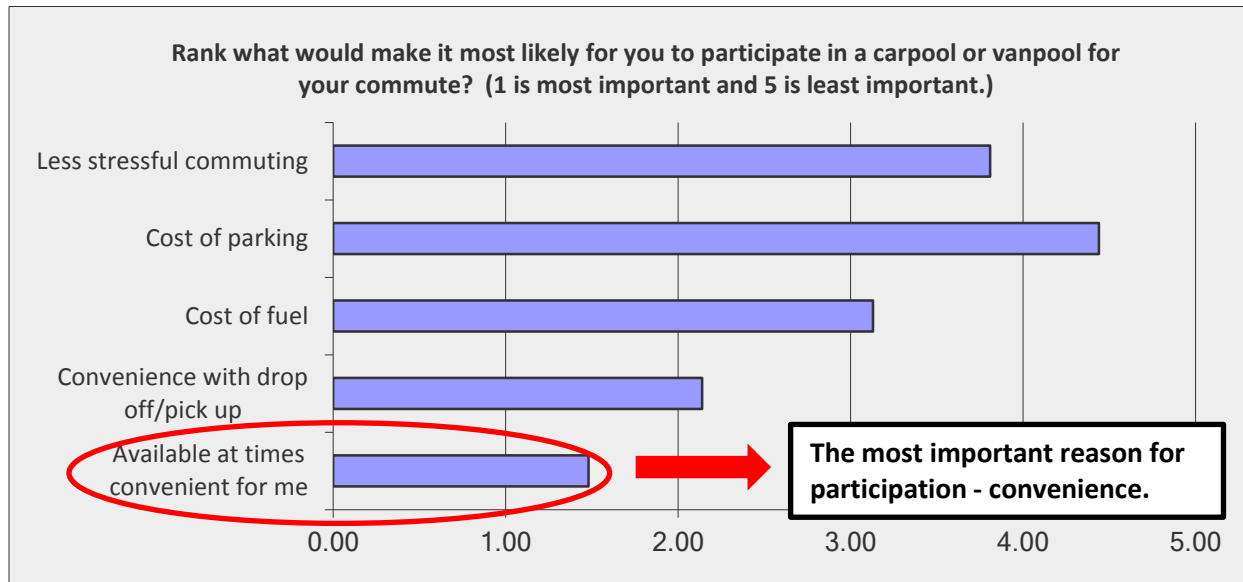




### 2.3.7 Vanpool and Carpool Options

Convenience is the most important factor when it comes to vanpool and carpool options. Improved frequency was identified an important factor followed by more convenient drop off/pick up locations.

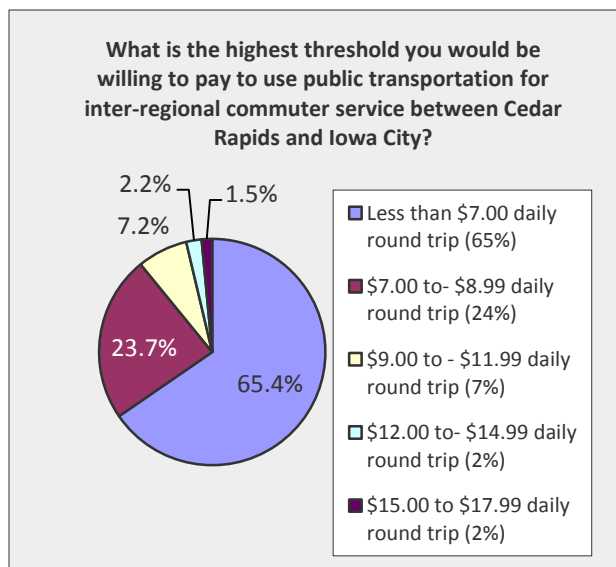
**Figure 2.20: Reasons to Consider Carpool or Vanpool**



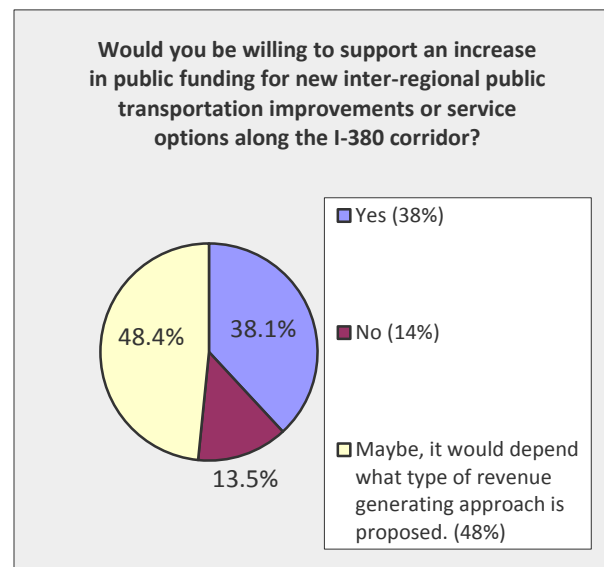
### 2.3.6 Cost of Service and Financing Options

In terms of cost, most respondents indicated they would be willing to pay less than seven dollars for a daily round trip on an inter-regional commuter service between Cedar Rapids and Iowa City. Approximately 10 percent are willing to pay more than nine dollars for the daily round trip. Depending on the approach, 86 percent of respondents are supportive of increasing public funding for public transportation improvements in the corridor.

**Figure 2.21: Cost for Public Transit Service**



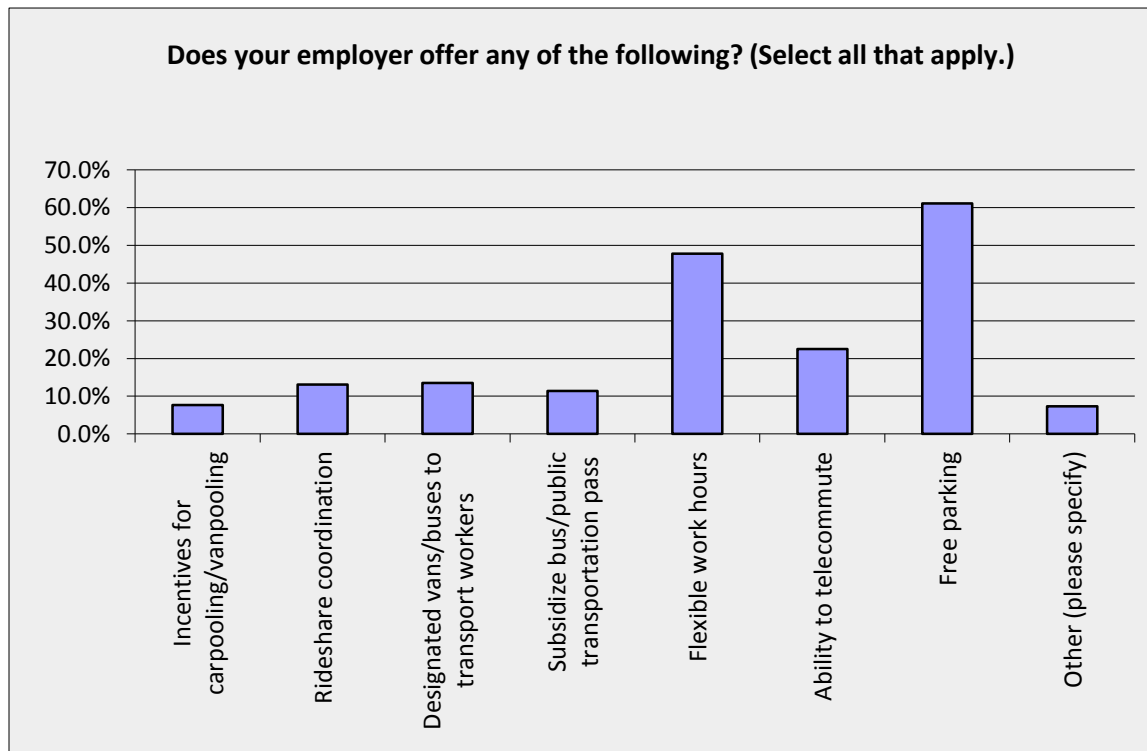
**Figure 2.22: Support for Increase in Public Funding**



### 2.3.8 Employer Provided Options

Currently, many employers do not offer commuter transportation options to help get their employees to work. More than 60 percent of employers offer free parking and 48 percent offer flexible work hours so employees can avoid peak traffic periods. Most employees take advantage of the free parking and flexible work hours, as well as telecommute. Most individuals that selected “Other” stated their employers did not offer any of the listed options or they work from home.

Figure 2.23 Employer Options



### 2.3.9 Additional Comments

Respondents were asked to provide further comments regarding transportation in Johnson and Linn Counties. Respondents noted generally see that there is a need to move forward with more transit options, with many commenting that they would like to see a light rail or passenger rail. Respondents also wanted options that are convenient in terms of time and location.

Another reoccurring theme was that respondents want I-380 to be a safer route to travel. There were several comments that noted the speed of other motorists on the highway as well as unsafe activities such as texting and driving.

## 2.4 Survey #2: Potential Service Options

A second electronic survey was conducted to evaluate what service improvements respondents would likely use to address transportation needs identified in the first survey. The survey was available from October 22 through November 18, 2014, and 339 surveys were completed. Two results worth noting include: Just over 63 percent of respondents would use public bus for their commute. Almost 56 percent of respondents would use a public vanpool or carpool for their commute. For a detailed breakdown of Survey #2 results, see **Appendix B**.

Other key highlights of the survey results include:

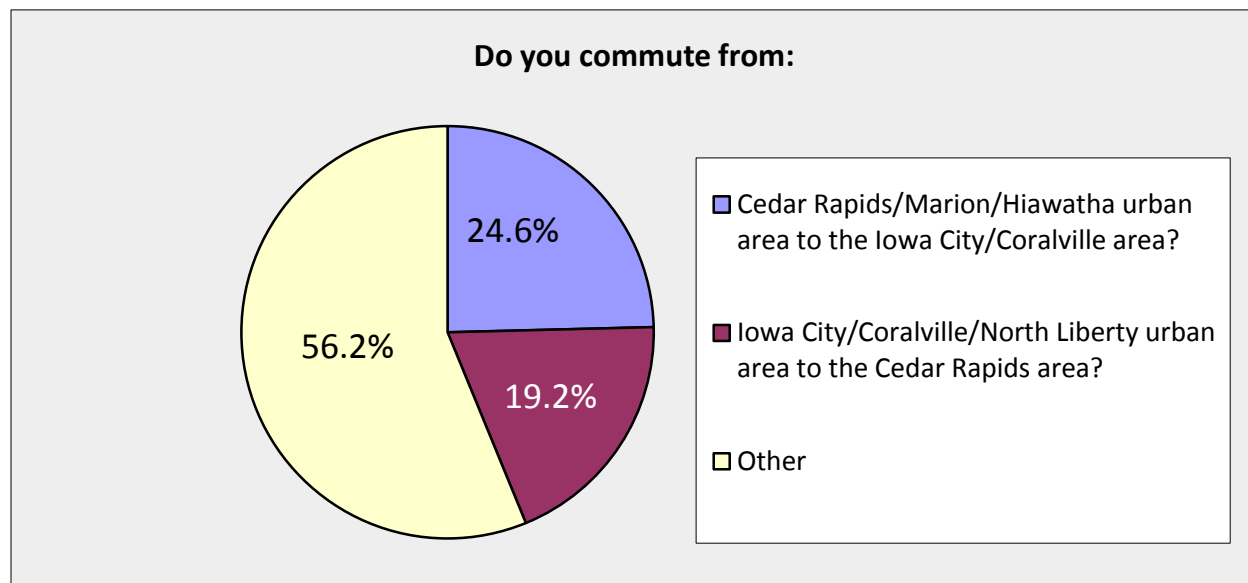
- Over half of respondents commute between the Cedar Rapids/Marion/Hiawatha urban area to the Iowa City/Coralville/North Liberty urban areas.
- Just over 53 percent of respondents use I-380 as their primary commuter route.
- Just over 35 percent of respondents said that fuel cost was not a consideration that would make them more likely to use public transportation options.
- Almost 24 percent of respondents reported a 15 minute additional traffic delay would cause them to consider public transportation options.
- Just over 37 percent of respondents noted they would not be likely to take public bus transportation options due to concern with being limited to a fixed schedule. For public vanpool and carpool options, the percentage was just below 36 percent with concern for fixed schedules.
- For public bus transportation, over 40 percent of respondents preferred a minimum service frequency of ½-hour in the a.m. and p.m. peak with provisions for a guaranteed ride home program.
- Just over 50 percent of respondents would be willing to accept a minimal increase in travel time using public transportation for their commute.
- Just over 30 percent of respondents would be willing to travel ½ to 1-mile to access public transportation while just over 26 percent would be willing to travel 1 to 3-miles.
- Just under 38 percent of respondents would be willing to walk ¼-mile to ½-mile to their destination from a drop off point while just over 35 percent would be willing to walk less than ¼-mile.
- If the final destination was not within walking distance, just over 46 percent of respondents would be willing to transfer to a local transit service to access their final destination.

The following pages provide a summary of the Survey #2 responses.

### 2.4.1 Commuting Patterns

56 percent of survey respondents commute between the Cedar Rapids/Marion/Hiawatha and Iowa City/Coralville/North Liberty urban areas. Slightly more commuter trips originate in the Cedar Rapids/Marion/Hiawatha urban areas.

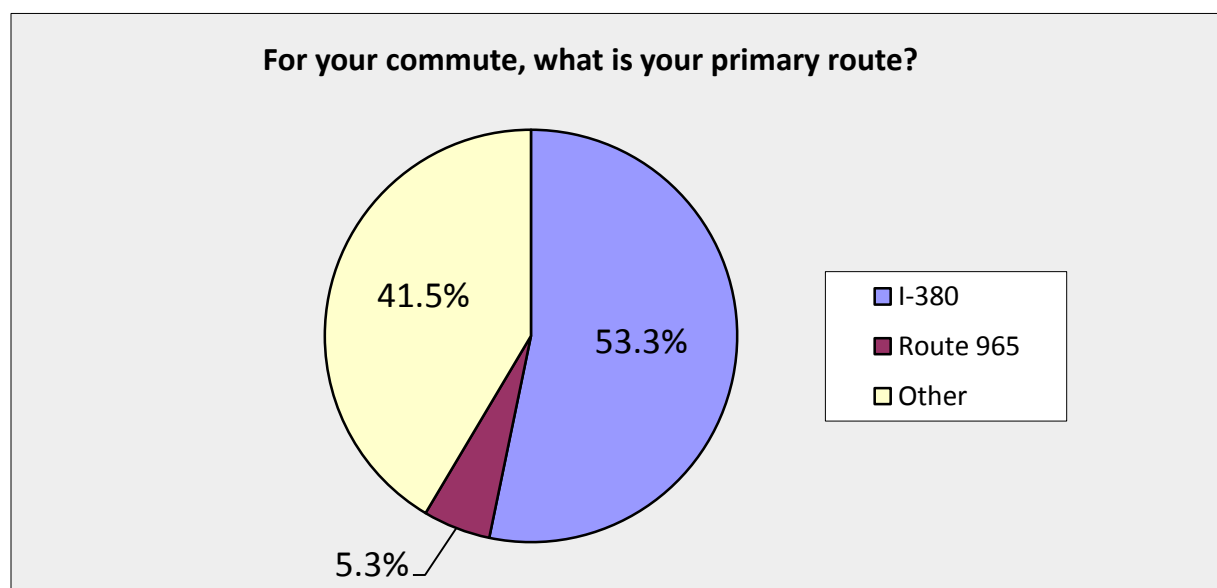
Figure 2.24: Commuting Patterns



### 2.4.2 Primary Commute Route

Just over 53 percent of respondents identified I-380 as their primary commuter route while just over 41 percent identified Route 965. All other routes accounted for less than 5 percent of responses.

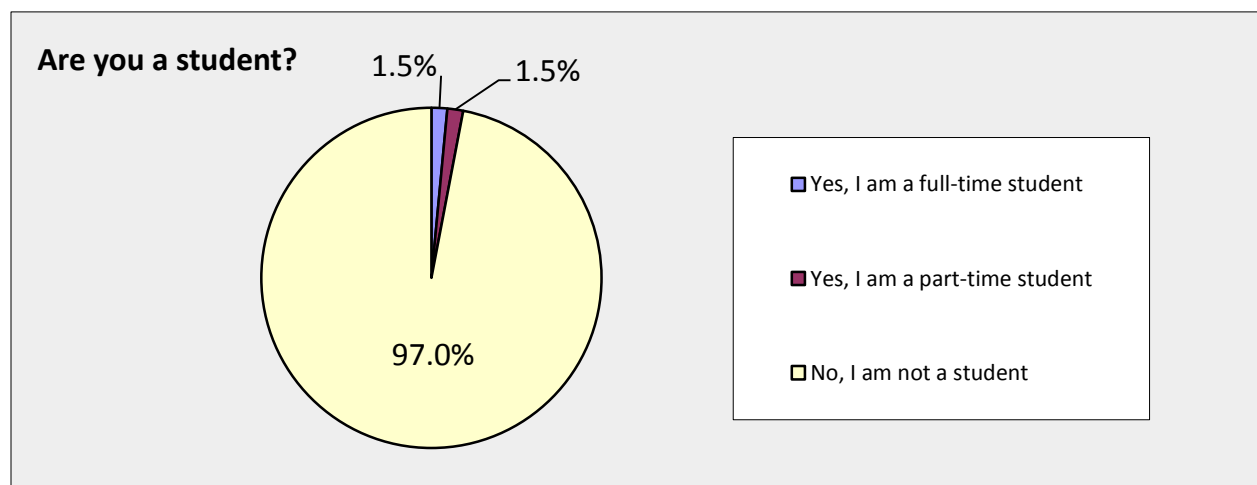
Figure 2.25: Primary Commute Route



### 2.4.3 Student Commuters

Only three percent of respondents identified themselves as students. This percentage was split evenly between full time and part time students. Of these students, just over 55 percent attend University of Iowa.

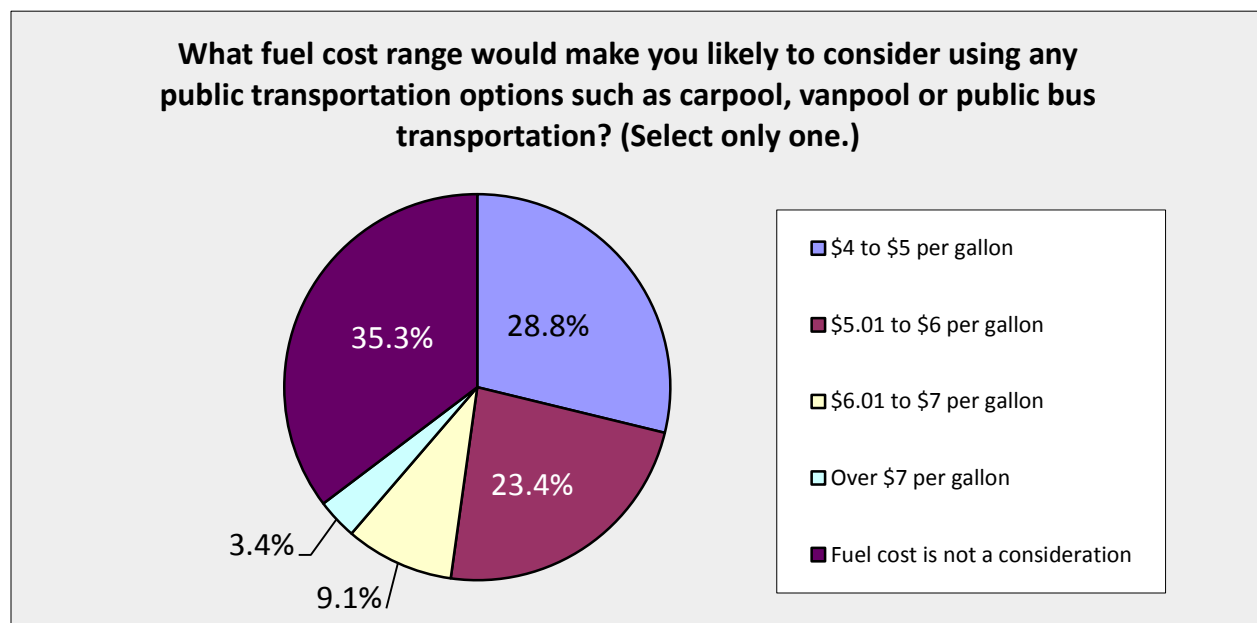
Figure 2.26: Student Commuters



### 2.4.4 Price of Fuel as a Factor for Considering Public Transportation Options

Just over 35 percent of respondents indicated that fuel cost is not a factor that would make them more likely to consider public transportation options. Almost 29 percent of respondents indicated that they would a price of \$4 to \$5 per gallon would make them more likely to consider public transportation options, while just over 23 percent indicated that \$5.01 to \$6 per gallon would make them consider public transportation options.

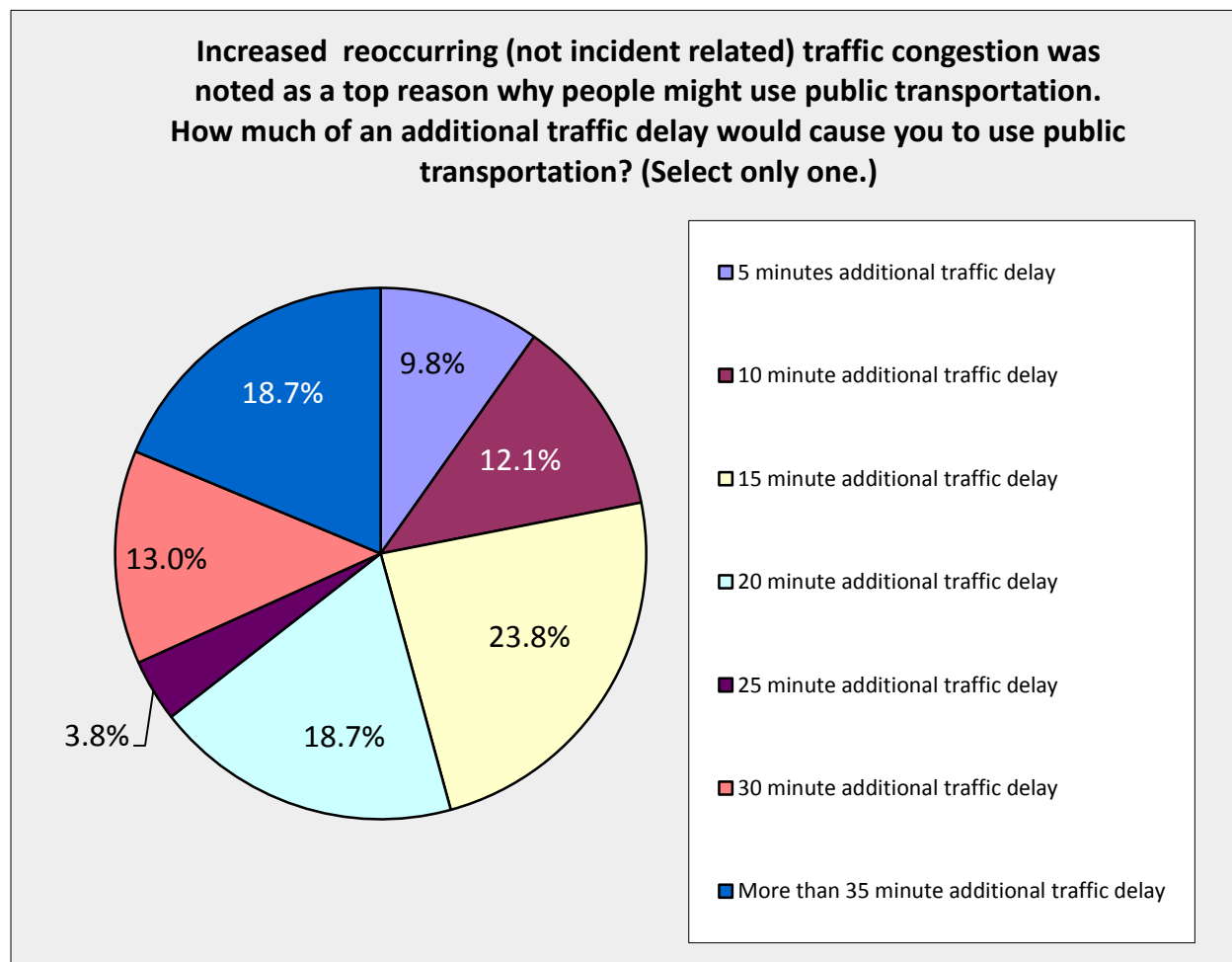
Figure 2.27: Price of Fuel



### 2.4.5 Congestion as a Factor for Considering Public Transportation Options

Frequency of recurring congestion can be another key reason for individuals to consider public transportation options. Recurring congestion occurs during peak travel periods for a simple reason – the number of vehicles trying to use the highway system exceeds the available capacity. This does not include nonrecurring traffic such as special events, accidents, etc. Almost 24 percent of respondents identified a 15 minute additional traffic delay would cause them to consider public transportation options.

**Figure 2.28: Congestion as a Factor for Considering Public Transportation Options**

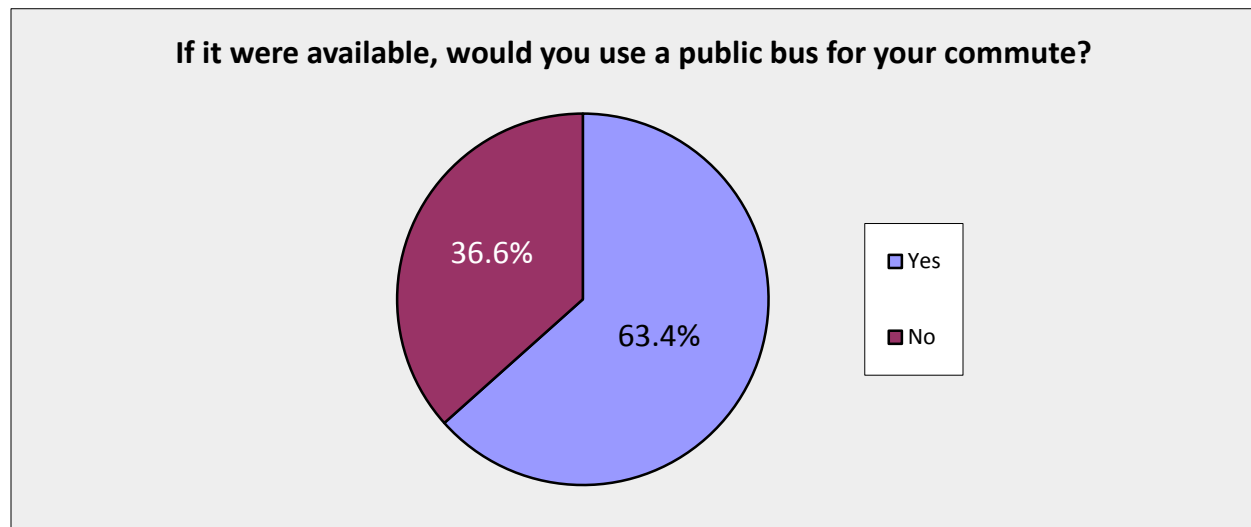




## 2.4.6 Pubic Bus Transportation

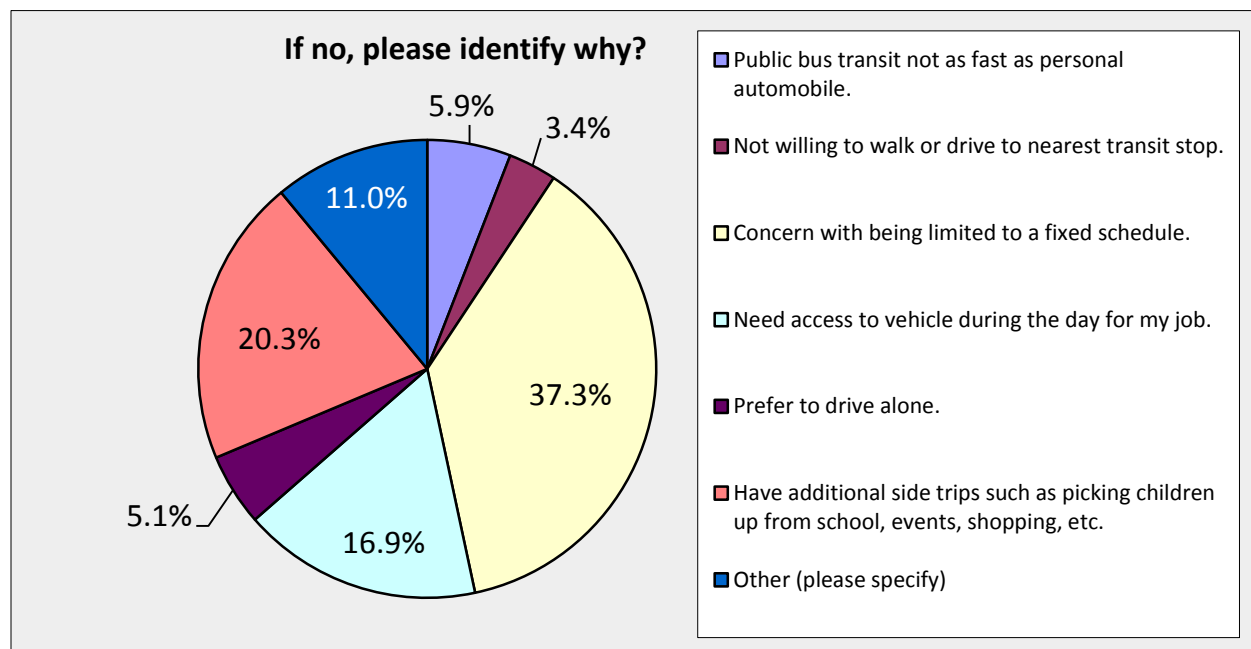
Over 63 percent of respondents would use public bus transportation for their commute. This number is significant and indicates a potential preference for this public transportation mode.

Figure 2.29: Public Bus Transportation Option



For those respondents who indicated they would not consider using public bus transportation for their commute, the most common reason cited was concern with being limited to a fixed schedule followed by the need to make side trips and the need for access to a vehicle during the day. It is important to understand these considerations when designing a service to meet the needs of potential users. Some of these concerns can be addressed through coordination with employers, provisions for a guaranteed ride home and midday service.

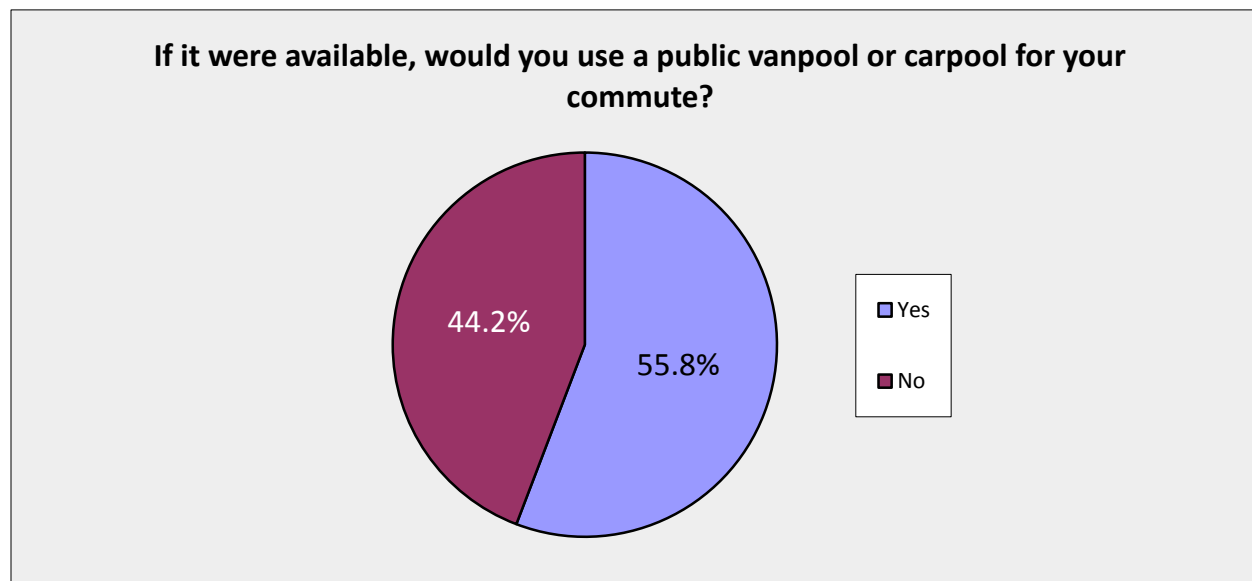
Figure 2.30: Why Would You Not Consider Public Bus Transportation



### 2.4.7 Pubic Vanpool or Carpool

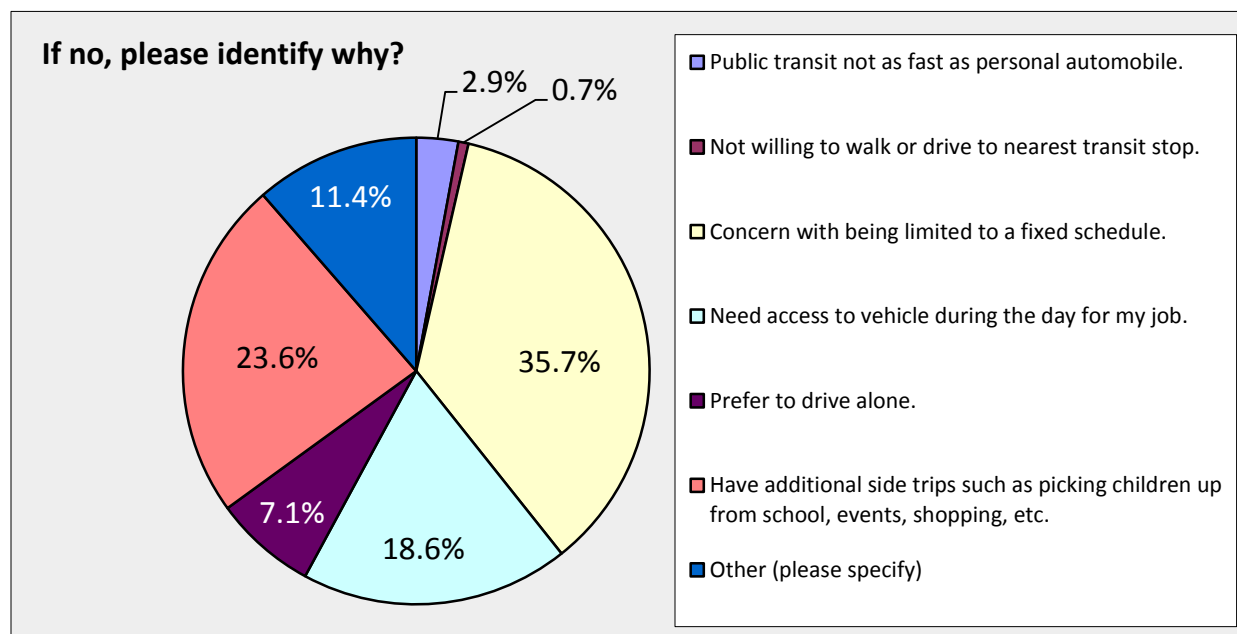
Almost 56 percent of respondents would use a public vanpool or carpool for their commute. Although not as high as public bus transportation, this number is still significant and indicates the potential demand for these types of services.

Figure 2.31: Public Vanpool and Carpool Options



For those respondents that indicated they would not consider using a public vanpool or carpool for their commute. The most common reason cited was concern with being limited to a fixed schedule followed by the need to make side trips and the need for access to a vehicle during the day for work. These reasons are similar to those cited for public bus transportation.

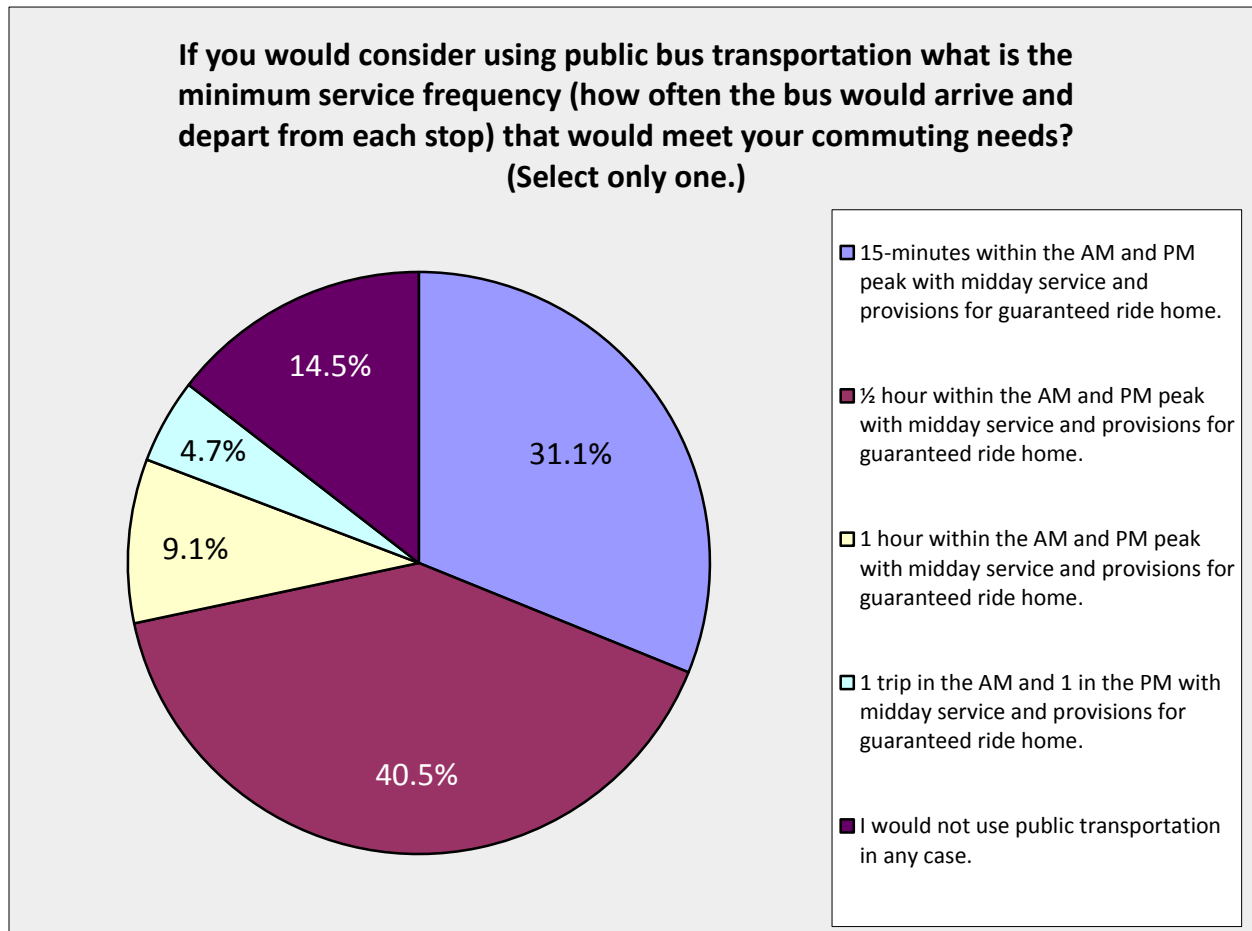
Figure 2.32: Why Would You Not Consider Public Vanpool or Carpool



### 2.4.8 Desired Service Frequencies

In designing a public transit service, one of the biggest factors in attracting potential riders is frequent service. For public bus transportation, over 40 percent of respondents preferred a minimum service frequency of ½-hour in the a.m. and p.m. peak with provisions for a guaranteed ride home program while just over 31 percent preferred a minimum frequency of 15-minutes in the a.m. and p.m. peak with provisions for a guaranteed ride home program.

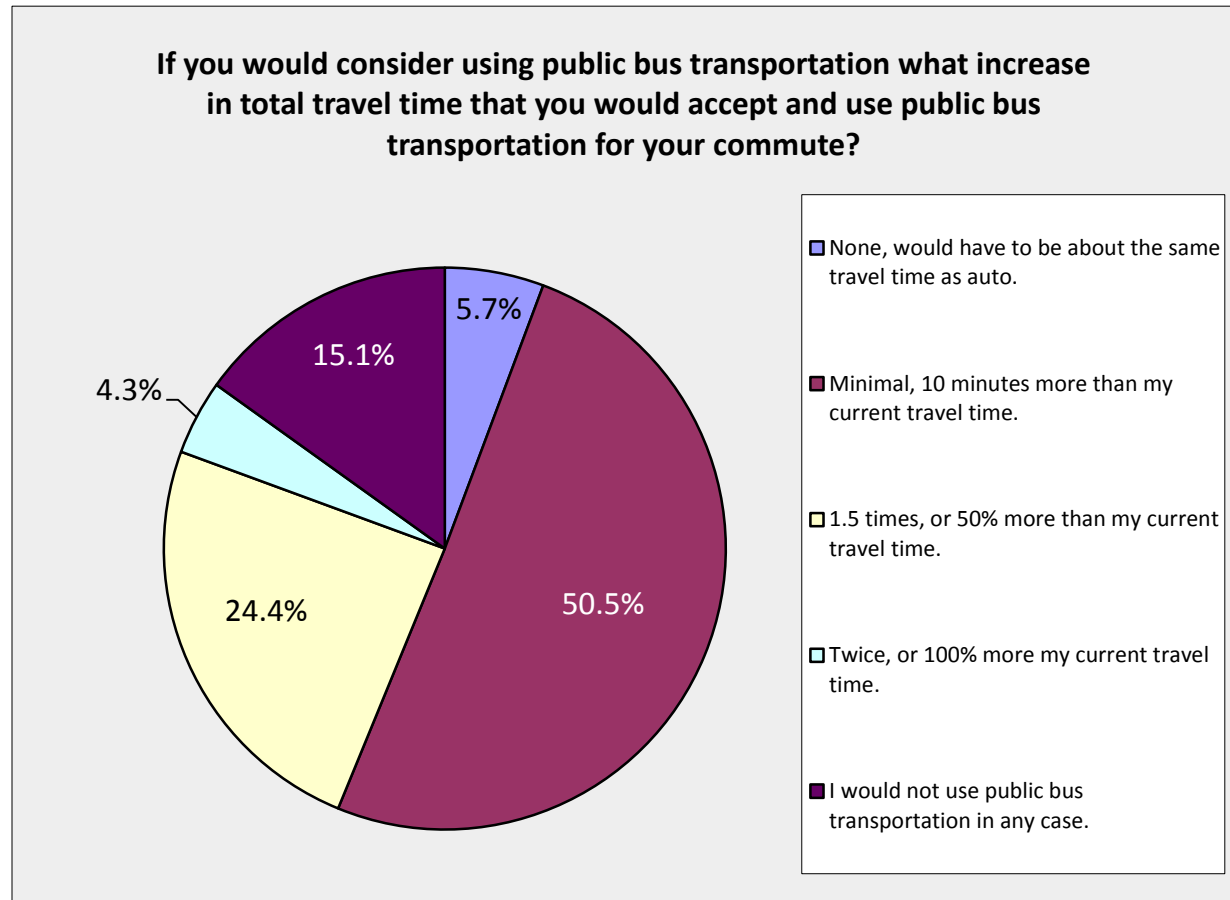
**Figure 2.33: Desired Service Frequencies**



### 2.4.9 Additional Travel Time

Travel time is also an important factor in developing an attractive transit service, especially an express commuter service. People generally recognize that public transit service will be slower than the automobile; however, it is still important to minimize travel times to remain competitive. This principle is reinforced locally with the survey results. Just over 50 percent of respondents would be willing to accept a minimal increase in their commute travel time using public transportation, while just over 24 percent would be willing to accept a 50 percent increase in commute travel time.

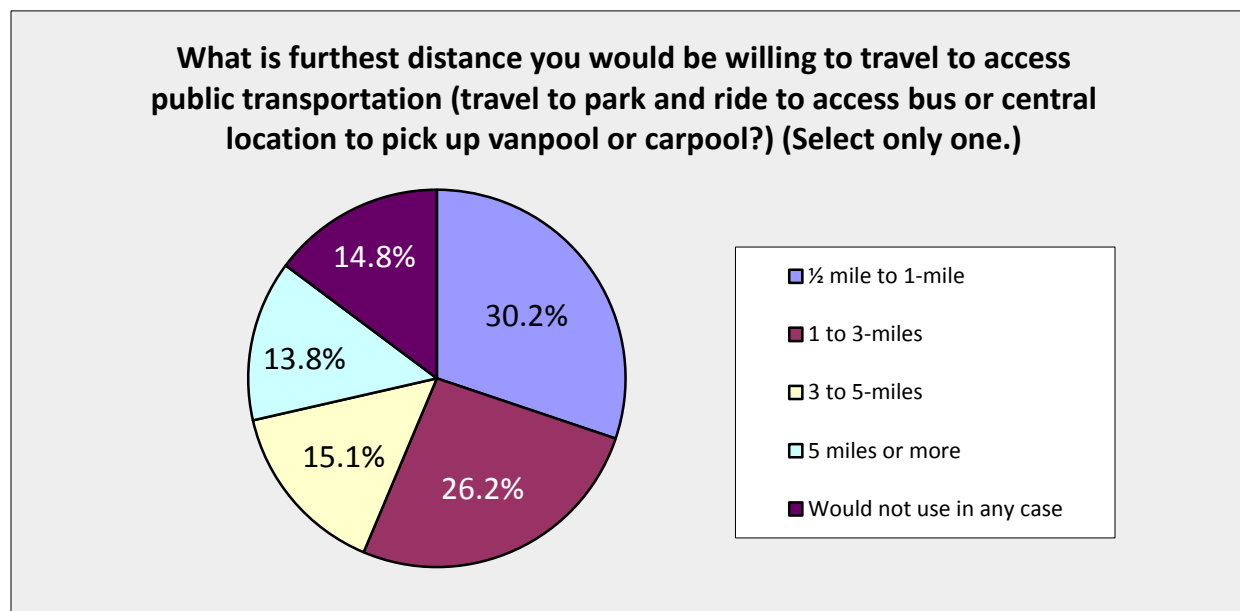
**Figure 2.34: Additional Travel Time**



## 2.4.10 Distance to Access Public Transportation

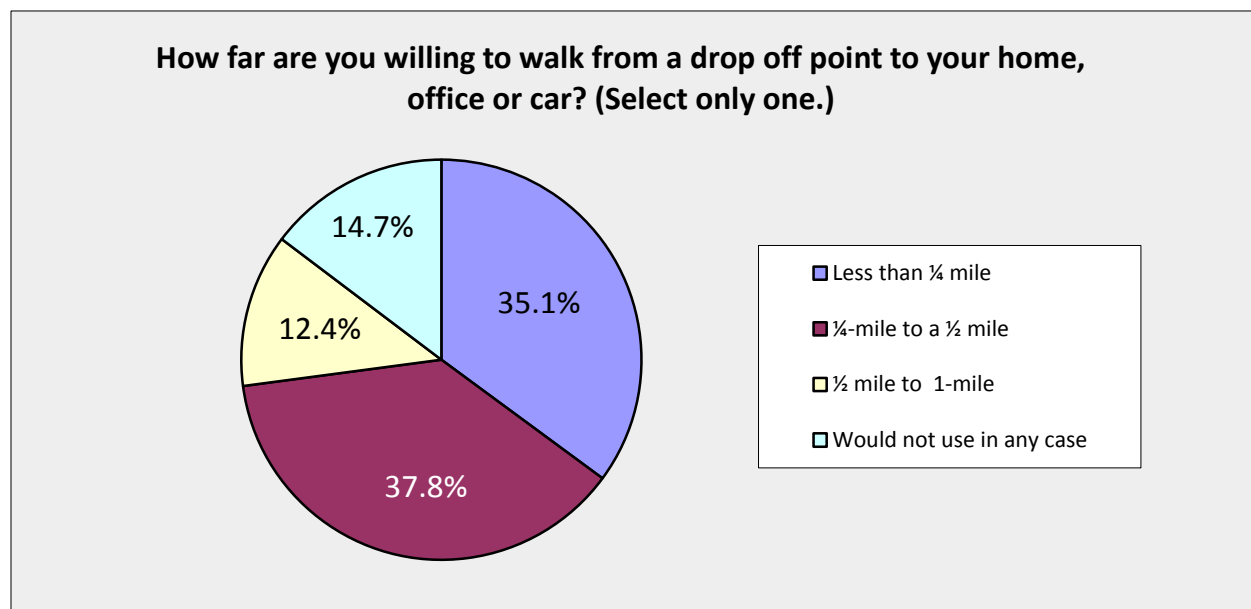
When designing a public commuter transportation service, it is important to identify collection and distribution points that are convenient to the user. Just over 30 percent of respondents indicated they would be willing to travel  $\frac{1}{2}$  to 1-mile to access public transportation while just over 26 percent would be willing to travel 1 to 3-miles.

Figure 2.35: Furthest Distance to Access Public Transportation



Just under 38 percent of respondents would be willing to walk  $\frac{1}{4}$ -mile to  $\frac{1}{2}$ -mile to their destination from a drop off point while just over 35 percent would be willing to walk less than  $\frac{1}{4}$ -mile.

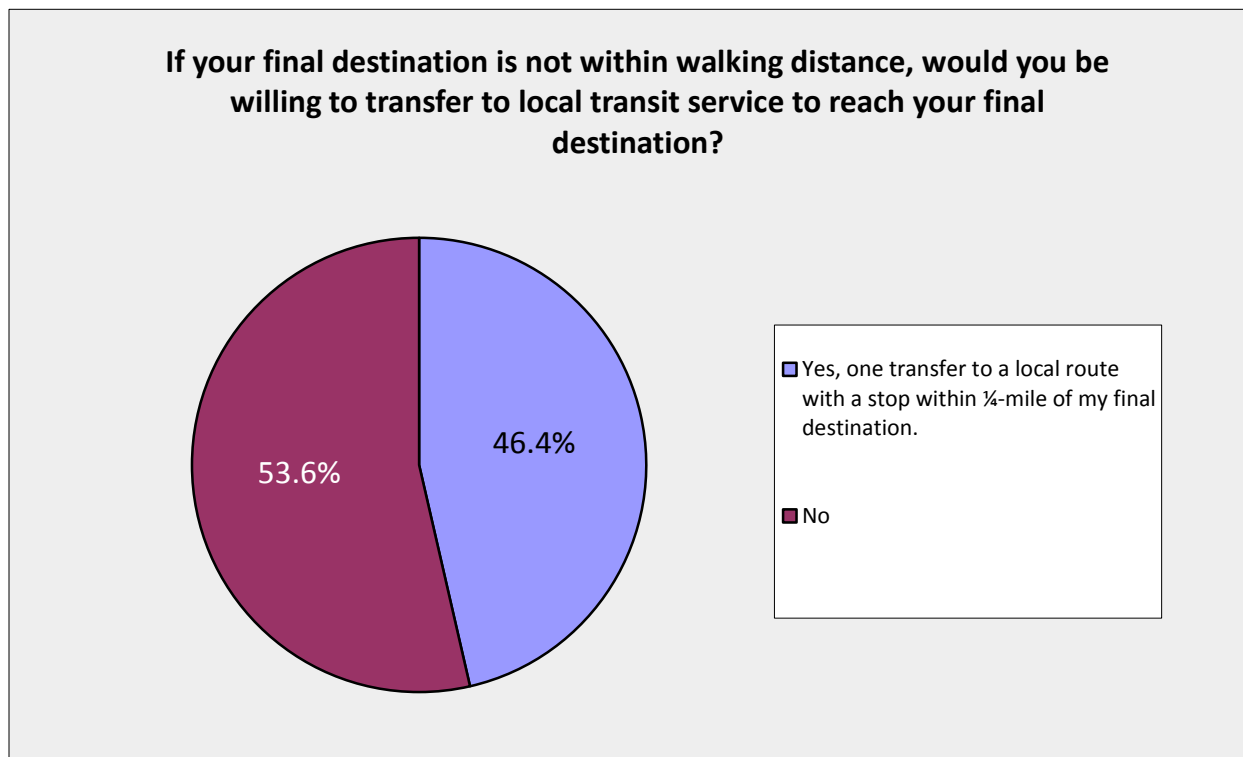
Figure 2.36: Furthest Distance Willing to Walk from Drop Off Point



### 2.4.11 Transfers to Local Transit Service

In some cases, work or other destinations will not be within walking distance of the final stop location. Therefore, it is important that the public commuter transportation service be designed to maximize stop locations near major employment centers as well as existing public transit hubs. Cedar Rapids, Coralville and Iowa City transit systems all have major hubs that connect to their entire transit network. However, it is also understood that not all users would be willing to transfer to a local service to reach their final destination. If the final destination was not within walking distance, just over 46 percent of respondents would be willing to transfer to a local transit service to access their final destination.

**Figure 2.37: Likelihood to Transfer to a Local Transit Service**

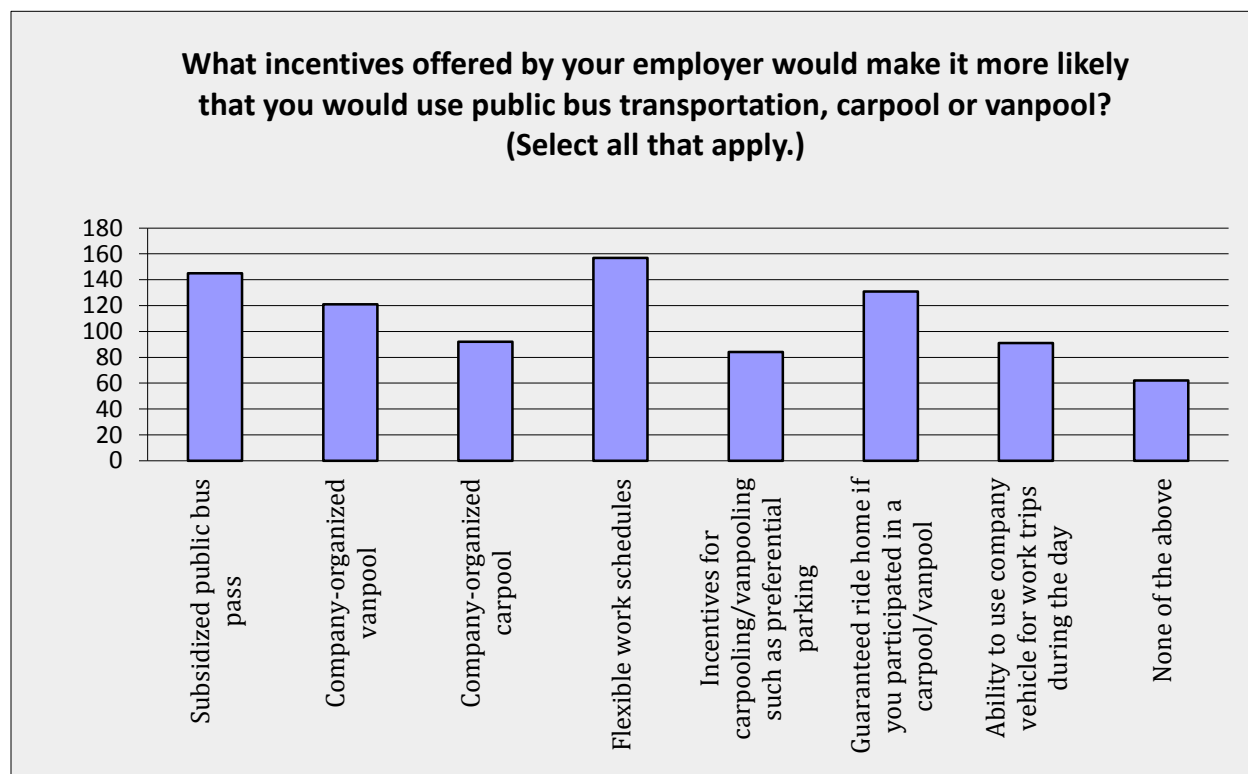




### 2.4.12 Employer Incentives

Public-private partnerships are critical to an effective transportation demand management strategy aimed at reducing single-occupancy vehicles and/or the number of vehicles on the roadway during peak periods. Survey #2 results below, as well as stakeholder interviews with major employers (see **Section 2.5** on the following page) confirm that employers and employees are considering the need to address growing congestion. As shown in **Figure 2.38** below, from the employee's perspective, the incentives that are most desirable are flexible work schedules, followed by subsidized public bus pass and guaranteed ride home program with carpool or vanpool.

**Figure 2.38: Employer Incentives**



## 2.5 Stakeholder Meetings

Interviews were conducted with major employers and stakeholders to better understand the commuter transportation needs in the study area. Input was received from 15 stakeholders/employers with seven interviews held face to face, seven completed by phone, and two completed online through employer surveys. Although the interviews did not find widespread transportation – related problems, several employers did note that there are issues. Additionally there is a high degree of interest from employers and stakeholders in transportation improvements. Some overall highlights of the results include:

- Most employees drive alone to work and there is not a general perception that alternative transportation options are needed.
- Most employers offer free parking but do not offer alternative transportation options. Several employers do provide benefits such as reduced cost bus passes.
- Employers in the urban areas cited fewer transportation issues than those in more rural locations because of good access to the labor market and the presence of transit service.
- This study focuses on commuter transit needs but it was expressed that others such as hospital patients, retail shoppers, students, etc. may be interested in transit options.
- The University of Iowa has an internal commuter program that addresses employee commuting issues. The University's vanpool program is limited to employees; the students are not eligible to participate.
- Many organizations interviewed have employees working during two or three shifts, which complicates transportation.
- Medical institutions especially cite irregular shifts, mandatory overtime and flexible hours as complicating factors.
- As employers are growing and the unemployment rate is decreasing, some employers cite transportation challenges as a factor in recruiting qualified applicants and retaining employees.
- Large employers located in rural areas cite transportation issues with recruiting and retaining employees especially in lower wage classifications. Limited access to employee markets and the relatively high cost of commuting create these issues.

## 2.6 Summary of Transportation Needs

The following section provides a summary of transportation needs based on the factors affecting work trip demand (demographics, commuter travel demand), survey responses, stakeholder input as well as discussions with the Advisory Group. Transportation needs are sometimes difficult to identify because some needs are subjective and related to expectations and objectives. For example, a need resulting from severe congestion on a facility is apparent and can be quantified, especially if the jurisdiction has a policy regarding LOS on the facility. However, needs that relate to mobility options, alternative transportation modes (e.g., public transportation) and economic opportunity for population subgroups (e.g., persons with disabilities) are sometimes not as apparent, and are difficult to quantify. To assess transportation needs the following need categories were developed and cover the perspectives of commuters, employers and the community in general. These objectives and expectations for the I-380 corridor were the basis for needs statements as follows:

- **I-380 Congestion and Safety**
  - The traffic operations analyses completed as part of the *I-380 Rural Corridor Feasibility Study* for the 2020 and 2040 traffic volume forecasts indicate that the rural stretch of the I-380 corridor requires expansion to a six-lane freeway by 2020 to continue to operate at the desired LOS during the a.m. and p.m. peak time periods
  - There is a concern for the safety of I-380
  - There should be an effort to minimize traffic volume growth
  - There should be an effort to minimize SOV commuting
- **Employment and Economic Development**
  - Local employers should benefit from an investment in commuter transportation by widening the available labor pool
  - Transportation should not be a barrier to employment opportunities
  - The positive effect on employment should contribute to economic development
- **Mobility and Transportation Options**
  - Public transportation should be available to provide options and opportunities
  - Public transportation provides personal mobility and freedom
  - Public transportation options will enhance regional mobility and expand job opportunities
  - Commuting ease contributes to economic development
  - Public transit has a proven record for reducing congestion
  - Address the public expectation that commuter transportation be enhanced
  - Commuting cost should be reduced
  - Provide equal opportunity for population subgroups including disabled persons and lower income residents
  - Address the needs of student commuter transportation
  - Include consideration of non-work trips in assessing approaches

- Environmental Considerations
  - The negative environmental effects of increasing traffic volumes should be addressed

These preliminary needs statements were discussed with the Advisory Group during the October 2, 2014 meeting and were accepted as a starting point. These need statements were also presented to the public during the public meeting held October 2nd.

### **2.6.1 Analysis of Needs**

There is a widespread perception that transportation improvements are needed in the I-380 corridor. Ninety-three percent of Survey #1 respondents cited the need for improvements and this sentiment was echoed in many of the interviews with employer stakeholders. **Table 2.12** on the following page provides an analysis of need level defined as “High,” “Moderate,” or “Low.”

#### ***Note on I-380 Congestion and Safety***

Although the ICTS is primarily focused on alternative public transportation options to SOV commuting on I-380, it is important to note that “increasing traffic congestion” and “safety” were cited as top concerns from Survey #1. Iowa DOT commissioned a study of the traffic operations and safety of I-380 to determine capacity and other improvements that should be made. Iowa DOT has a standard for freeways such as the rural portion of I-380 based on the traffic engineering LOS concept. The *I-380 Rural Corridor Feasibility Study* traffic analysis indicated that the rural stretch of the I-380 corridor requires expansion to a six-lane freeway by 2020 to continue to operate at the desired LOS during the a.m. and p.m. peak time periods.

Although there is a relatively low level of commuting between the Cedar Rapids and Iowa City urban areas, the number may be significant. According to CTPP data, there are approximately 7,530 commuters travelling between the Cedar Rapids and Iowa City metropolitan areas.

**Table 2.12: Summary of Objectives and Expectations**

Objective/Expectation	Current Status	Need Level	Discussion
I-380 Safety	Survey #1 respondents cited safety as a key concern.	High	To satisfy public expectations and adhere to Iowa DOT's standards for rural Interstate LOS I-380 will need to be expanded by 2020.
Mobility and Transportation Options	Limited or inadequate transportation options available, particularly modal options.	High	Additional options, such as vanpool, carpool and public bus transportation, should be offered.
Mobility and Transportation Options	Population subgroups, such as disabled and low income persons, do not have the equal opportunity for employment.	High	Additional options, such as vanpool, carpool and public bus transportation, should be offered with provisions for affordable commuting.
I-380 Congestion	There is existing and forecast congestion on I-380.	Moderate	To satisfy public expectations and adhere to Iowa DOT's standards for rural Interstate LOS I-380 will need to be expanded by 2020.
Employment and Economic Development	Some employers cite transportation-related issues with employee recruitment and retention.	Moderate	Vanpool, carpool and public bus transportation options provide the ability to expand job opportunities for residents and widen the labor pool for employers.
Employment and Economic Development	Some employers site housing cost as a major factor in commuting distance.	Moderate	Housing costs are significantly higher in the Iowa City/Coralville metropolitan area than the rest of the region encouraging a portion of the workforce to seek housing options outside of the city where they work.
Employment and Economic Development	Inter-regional commuting is expensive and requires an auto.	Moderate	Inter-regional commuters are confronted with high cost due to distance and parking cost.
Environmental Considerations	The vast majority of inter-regional commuting is SOV.	Low	High level of SOV commuting has environmental impacts.

### 3.0 Existing Public Transportation Services

Multiple public and private transportation providers offer transportation services within the study area, with a range of services including vanpools, carpools, carsharing, demand-response and fixed-route intercity van or bus service, taxi service and other private services. For comparative purposes, annual passenger miles and ridership is noted for the public urban service providers with fixed-route service. **Figure 3.4** and **3.5** on page 56 provides a comparative summary of annual passenger miles and ridership for all fixed route providers. These quantitative comparisons are not made for the rural demand-response and specialty services, due to the size the service areas and the diverse and unique needs of each area. For these providers, the focus of the comparative analysis is based on service area, type of service provided (paratransit, special needs) span of service (hours of operation) and fare structures. Any future public transportation service should complement and not duplicate or compete with established private transportation services. Therefore, the focus of the analysis for both the public and private transportation providers is a gap analysis in service coverage, span of service, availability to the general public, and type of service, with a focus on interregional service between major destinations.

#### 3.1 Public Transportation Services

The study area is served by multiple public transportation providers. For the purposes of this study, public transportation services are defined as shared transportation services that are open and available to anyone in the general public. Public transportation service may include private non-profit organizations providing transportation services that are open to the public. These are distinct from other shared private transportation modes such as company vanpools which are not shared by the general public or are privately owned and operated. Demand-response service is the kind of transit service where individual passengers can request door-to-door or point-to-point transportation from a specific location to another specific location at a certain time. It may also be called "dial-a-ride". These services usually require advance reservations. A fixed-route service is when vehicles run on regular, pre-designated, pre-scheduled routes, with no deviation. Typically, fixed-route service is characterized by features such as printed schedules or timetables, designated bus stops where passengers board and alight and the use of larger transit vehicles.

#### 3.2 Cedar Rapids Transit

Cedar Rapids Transit operates fixed-route public transit service within Cedar Rapids, Hiawatha and Marion and contracts out ADA paratransit service to Linn County LIFTS. Cedar Rapids Transit is operated as a department under the City Manager's Office of the City of Cedar Rapids with policy direction provided by the City Manager and City Council. Cedar Rapids Transit operates 12 routes, shown in **Figure 3.1** on the following page, with a service area that covers approximately 22 square miles and a population of 97,715. All routes transect downtown to facilitate transfers. Fixed-route service is operated weekdays from 5:20 a.m. to 7:20 p.m. and weekends from 8:25 a.m. to 5:25 p.m. Service frequencies vary by route between 30 minutes and 60 minutes. One-way fares are \$1.50 for adults, \$0.75 for students, elderly, disabled and Medicare cardholders, and free for children 5 and younger. Cedar Rapids Transit provides several options for passes including a 31 day, 10 day and day pass for \$40.00, \$15.00, and \$3.00 for an adult and \$20.00, \$7.50, and \$3.00 for students, elderly, disabled and Medicare card holders. Cedar Rapids Transit offers income-based half-price fares. In 2012, Cedar Rapids



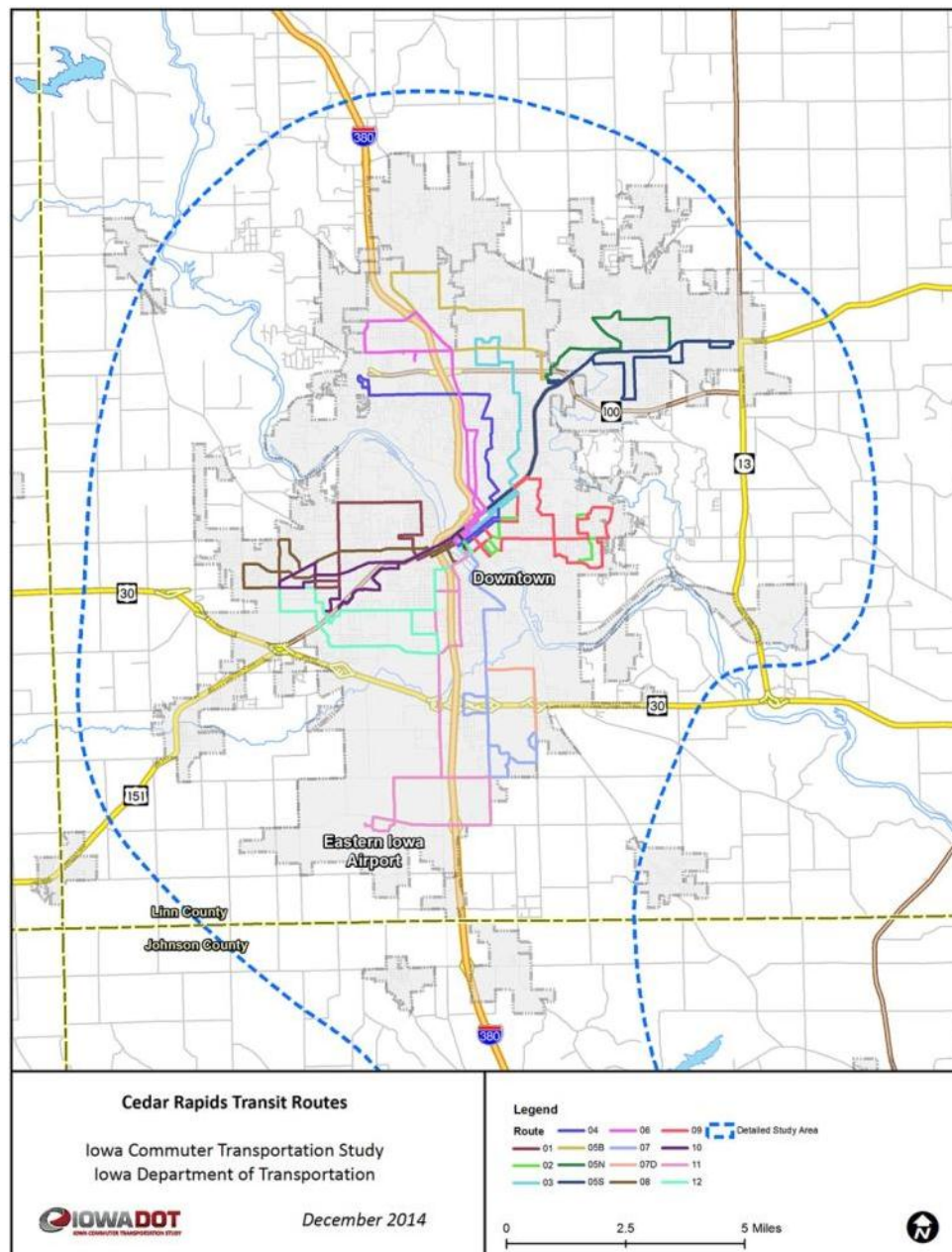
Transit reported 5,945,009 passenger miles and 1,276,662 annual unlinked trips, an average of 4,595 weekday unlinked trips. Annual passenger miles have increased 5.3 percent and annual unlinked trips have remained fairly constant over the past 10 years. Unlinked trips are the total number of passengers who board public transit vehicles including transfers.

**Table 3.1: Cedar Rapids Annual Passenger Miles and Unlinked Trips**

Cedar Rapids Transit	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Annual Passenger Miles	5,646,842	4,994,792	4,990,273	5,181,552	5,384,589	5,509,833	6,275,689	5,688,125	6,004,134	5,945,009
Annual Unlinked Trips	1,285,518	1,129,368	1,132,118	1,172,111	1,211,118	1,228,858	1,252,633	1,173,098	1,234,648	1,276,662

Source: National Transit Database, Federal Transit Authority

**Figure 3.1: Cedar Rapids Transit Routes**



### 3.2.1 Neighborhood Transportation Services (NTS)

Neighborhood Transportation Services (NTS) is a private non-profit organization that operates a door-to-door demand-response public transit service at night and during portions of the weekend when the fixed-route Cedar Rapids Transit buses do not operate. NTS riders schedule an appointment for pickup with NTS at least 24 hours in advance for transportation to work and education. NTS currently has four 18 passenger buses and four vans. The NTS service area includes the greater Cedar Rapids metropolitan area. Hours of operations during the week are 6:30 PM to 6:00 a.m., and weekends Saturday after 5:00 p.m. and all day Sunday to 6:00 a.m. Monday. One-way full fare is \$5.00. In 2012, NTS reported 266,158 annual revenue miles and 57,107 annual trips.

**Table 3.2: NTS Annual Revenue Miles and Trips**

NTS	2006	2007	2008	2009	2010	2011	2012
Annual Revenue Miles	190,673	250,624	240,241	236,540	226,787	243,864	266,158
Annual Trips	20,645	56,675	61,770	45,458	47,664	54,044	57,107

Source: Iowa DOT, Office of Public Transit

### 3.3 East Central Iowa Transit (ECIT)

East Central Iowa Transit (ECIT) was established in 1975 to provide demand-responsive rural public transit service in Benton, Iowa, Johnson, Jones, Linn and Washington counties. ECIT service provider areas, as well as other demand-response service areas within the study boundary are shown in **Figure 3.2** on page 52. ECIT is responsible for the administration, coordination, and planning functions of the regional system. ECIT does not directly operate the transit service, but alternatively contracts with a provider in each affiliated county. ECIT coordinates the provision of public transit services in all of Benton, Iowa, Jones and Washington Counties, and the rural areas of Johnson and Linn Counties. These services are open to the general public, including persons with disabilities. In addition, ECIT providers in Linn and Johnson Counties have separate contracts with urban public transit providers (Cedar Rapids Transit, Coralville Transit, and Iowa City Transit) in their respective counties to provide ADA paratransit service. A portion of the funding and technical assistance for operations and capital expenses is provided by the Iowa DOT Office of Public Transit and Federal Transit Administration (FTA). ECIT is governed by the ECICOG Board of Directors. Transportation sub providers include: Linn County LIFTS, Johnson County SEATS, Benton County Transportation, Iowa County Transportation, Jones County JETS and Washington County Mini Bus. In 2012, ECIT contracted providers reported 1,467,938 annual revenue miles and 366,255 annual trips.

#### 3.3.1 Linn County LIFTS

Linn County LIFTS provides door-to-door demand-response ADA paratransit public transit service for eligible elderly and disabled passengers who cannot use the fixed-route system in the Cedar Rapids, Marion, and Hiawatha and Linn County general public passengers outside of the metropolitan area. Hours of operation are 6:00 a.m. to 6:40 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. Saturday. One-way full fare is \$5.00. In 2012, Linn County LIFTS reported 300,638 annual revenue miles and 79,402 annual trips.

**Table 3.3: Linn County LIFTS Annual Revenue Miles and Trips**

<b>Linn County LIFTS</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Annual Revenue Miles	317,714	311,518	327,781	339,333	320,814	304,837	300,638
Annual Trips	82,687	82,563	81,112	84,021	88,277	89,236	79,402

Source: Iowa DOT, Office of Public Transit

### 3.3.2 Johnson County SEATS

Johnson County SEATS provides demand-response door-to-door ADA paratransit public transit service to senior citizens and people with disabilities in the county's urbanized area, and to the general public in Johnson County's non-urbanized area. Johnson County SEATS is a collaborative program funded by Iowa City, Coralville, North Liberty, and University Heights, Johnson County and ECICOG. ADA complementary paratransit riders must apply and be certified in the city in which they reside with each city having its own requirements. General public passengers in the county's rural areas do not need to apply for service to be eligible. The hours of operation vary with the community served. Iowa City and University Heights weekdays from 6:00 a.m. to 11:59 p.m. and Saturday 6:00 a.m. to 7:00 p.m. Coralville, weekdays from 6:00 a.m. to 11:59 p.m. and Saturday 7:15 a.m. to 7:30 p.m. North Liberty, weekdays, arrive at residences home around 7:00 a.m., 11:00 a.m. and 4:30 p.m. Morse, Solon, Shueyville, Sutliff, Swisher and Surrounding Areas – Northern Johnson County, Monday, Tuesday, Thursday 8:30 a.m. to 4:30 p.m. Oxford, Tiffin, Cosgrove and Surrounding Areas – West Central Johnson County, Tuesday and Thursday 8:30 a.m. to 4:30 p.m. Loan Tree, Sharon Center, Hills, Frytown and Surrounding Areas – Southern Johnson County, Monday, Wednesday and Friday, 8:30 a.m. to 4:30 p.m. One-way full fare is \$2.00. Johnson County SEATS provides a \$1.00 discount for Iowa City residents for trips originating and terminating within Iowa City. In 2012, Johnson County SEATS reported 450,732 annual revenue miles and 124,378 annual trips.

**Table 3.4: Johnson County SEATS Annual Revenue Miles and Trips**

<b>Johnson County SEATS</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Annual Revenue Miles	296,473	324,945	359,268	428,339	379,811	421,488	450,732
Annual Trips	95,082	99,105	99,605	103,550	104,312	112,558	124,378

Source: Iowa DOT, Office of Public Transit

### 3.3.3 Benton County Transportation

Benton County Transportation provides demand-response public transit service within rural Benton County with limited service to Cedar Rapids. Hours of operation vary depending on origin and destination; however, arrangements to meet individual needs can be made by appointment Monday through Friday. Round-trip fares are \$2.00 in county, \$10.00 to Cedar Rapids and \$20.00 for special trips. In 2012, Benton County Transportation reported 85,774 annual revenue miles and 22,728 annual trips.

**Table 3.5: Benton County Transportation Annual Revenue Miles and Trips**

<b>Benton County Transportation</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Annual Revenue Miles	102,104	101,334	97,410	95,279	100,864	90,174	85,774
Annual Trips	27,374	26,545	29,975	28,962	25,057	25,076	22,728

Source: Iowa DOT, Office of Public Transit

### 3.3.4 Iowa County Transportation (ICOT)

Iowa County Transportation (ICOT) provides door-to-door demand-response, ADA accessible public transit service within Iowa County and limited service to Cedar Rapids and other destinations. Service hours are from 6:00 a.m. until 5:00 p.m. Monday through Friday. One-way fares within Iowa County for local trips are \$3.00, 0-10 miles are \$6.00, 10-20 miles are \$8.00, and 20+ miles are \$10.00. One-way fares outside of Iowa County, Iowa County to Cedar Rapids are \$40.00. Waiting times are \$20.00 per hour. In 2012, Iowa County Transportation reported 138,817 annual revenue miles and 25,453 annual trips.

**Table 3.6: Iowa County Transportation Revenue Miles and Trips**

Iowa County Transportation	2006	2007	2008	2009	2010	2011	2012
Annual Revenue Miles	147,716	154,855	157,841	152,606	175,236	170,503	138,817
Annual Trips	25,236	25,689	25,612	27,538	27,275	26,051	25,453

Source: Iowa DOT, Office of Public Transit

### 3.3.5 Jones County JETS

Jones County JETS provides door-to-door demand-response public transit service within Jones County and limited trips outside of the county. Hours of service are weekdays 7:00 a.m. to 5:00 p.m. One-way fares within Jones County cities are \$2.00, between cities are \$3.00 and extra stops within the same city are \$1.00 each. Special trips outside of Jones County are \$25.00/hour if wait and return (\$25 each way if no waiting). In 2012, Jones County JETS reported 183,811 annual revenue miles and 32,414 annual trips.

**Table 3.7: Jones County JETS Annual Revenue Miles and Trips**

Jones County JETS	2006	2007	2008	2009	2010	2011	2012
Annual Passenger Miles	181,676	163,374	183,327	166,719	160,810	193,156	183,811
Annual Trips	33,110	29,802	31,557	31,169	30,194	30,843	32,414

Source: Iowa DOT, Office of Public Transit

### 3.3.6 Washington County Mini Bus

Washington County Mini Bus provides demand-response, wheelchair accessible public transit service within Washington County and limited service to Iowa City. Hours of service are weekdays 7:00 a.m. to 5:00 p.m., Thursday 5:00 p.m. to 9 p.m. and Sunday 8:00 a.m. to 12:00 p.m. Within Washington, Wellman, Kalona and Riverside one-way fares are \$2.50, 1 to 4 miles out of the city are \$4.00, 5 to 9 miles out of the city are \$7.00, between cities or Washington, Brighton, Kalona, Richmond, Riverside, Wellman and Crawfordsville are \$9.50, West Chester and Ainsworth are \$7.00. In between stops are \$0.50 each. Iowa City stops are \$1.00 each. After hours and out of town are \$15.00. A daily shuttle is provided for medical trips to Iowa City from Washington for \$42.00 round trip. In 2012, Washington County Minibus reported 308,166 annual revenue miles and 81,880 annual trips.

**Table 3.8: Washington County Mini Bus Annual Revenue Miles and Trips**

Washington County Mini Bus	2006	2007	2008	2009	2010	2011	2012
Annual Revenue Miles	266,417	278,086	286,177	304,935	305,841	324,428	308,166
Annual Trips	75,165	81,956	81,153	85,177	86,200	84,999	81,880

Source: Iowa DOT, Office of Public Transit

### 3.4 River Bend Transit (RBT)

River Bend Transit (RBT) is a private not-for-profit corporation which has been designated by the county boards of supervisors in Cedar, Clinton, Muscatine and Scott counties to be the single administrative agency for public transit in the rural parts of the region. RBT is administered by an executive director. Policy direction is provided by a board of directors with representation from each county. RBT was Iowa's first regional consolidated transit system, starting public transit operations in 1978. RBT provides demand-response and subscription curb-to-curb service to elderly and disabled rural residents and to the general public in Cedar, Clinton, Muscatine and Scott counties weekdays. In rural areas, RBT serves a different portion of each county on a designated day each week. For that reason, riders must plan their trips for that one day of the week when public transit service is offered in the county. The service day in each county is the same each week, but the times a vehicle is available may vary. Hours of operation in Cedar County, the only county served by River Bend Transit within the study area, are 5 a.m. to 11 p.m. with service to Tipton on Monday, service to Iowa City on Wednesday, county service to Tipton on Wednesday, service to Cedar Rapids, Iowa City, Davenport and special trip service on Thursday, and service to Iowa City on Friday. Round-trip fares for the elderly (60+) or disabled are \$6.50 out of county, \$1.50 in-town service and \$3.00 county service. Fares for the general public are \$5.00 additional. RBT provides service to the University Hospitals and Clinics, or to other Iowa City destinations, and returns passengers to their origin. Fares to Iowa City vary depending on county of origin. Round-trip fares from Clinton County to Iowa City, for example, are \$18.00. In 2012, the Cedar County portion of River Bend Transit service reported 18,078 annual revenue miles and 2,492 annual trips.

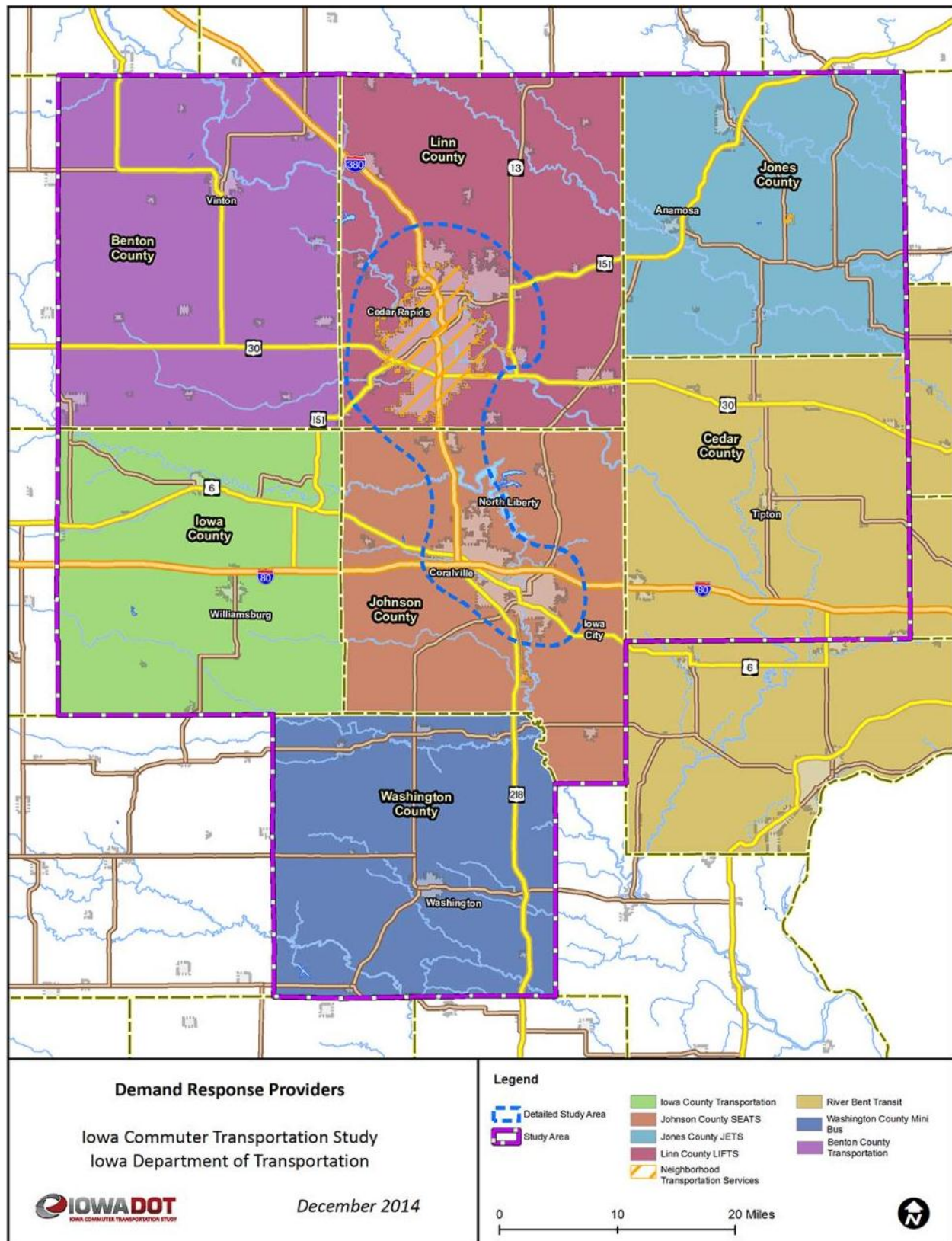
**Table 3.9: River Bend Transit (Cedar County) Annual Revenue Miles and Trips**

<b>River Bend Transit (Cedar County)</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Annual Revenue Miles	17,861	15,301	16,977	18,531	19,586	16,701	18,078
Annual Trips	2,847	1,893	2,242	2,761	3,063	2,883	2,492

*Source: Iowa DOT, Office of Public Transit*



Figure 3.2: Demand-Response Service Areas



### 3.5 Iowa City Transit

Iowa City Transit operates fixed-route service within Iowa City and University Heights and contracts out ADA paratransit service to Johnson County SEATS. Iowa City Transit is operated by the City of Iowa City with policy direction provided by the City Council. Iowa City Transit operates 28 routes, shown in **Figure 3.3** on the following page, with a service area of approximately 25 miles and population of 68,947. Other transit services within Iowa City are provided by Coralville Transit and University of Iowa CAMBUS at a central transfer point downtown. Fixed-route service is operated weekdays from 5:45 a.m. to 11:10 p.m. and Saturdays from 5:45 a.m. to 7:40 p.m. There is currently no Sunday service. Service frequencies vary by route between 30 minutes in the a.m. and p.m. peak periods, 6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:30 p.m., and 60 minutes in off peak periods, Monday through Friday, 9:00 a.m. to 3:00 p.m. and 6:30 p.m. to 10:30 p.m. and Saturday 6:00 a.m. to 7:00 p.m. One-way fares are \$1.00 for adults, \$0.75 for students, and free for children 5 and younger. Iowa City Transit provides several options for passes including a 31 day pass for \$32.00 for adults (18 years old and up), \$27.00 for youth (K-12), \$28.00 for bulk sales, \$27.00 for low income and a 10-ride pass for \$8.50. Iowa City Transit provides reduced and special one-way fares for elderly (60+ years, off-peak only) for \$0.50, elderly low income (off peak only, pass required) free, persons with disabilities (off-peak only, pass required) free, and a Saturday Family Fare (Up to 2 adults and 2 children) for \$1.00. In 2012, Iowa City Transit reported 4,036,682 passenger miles and 1,965,419 annual unlinked trips, an average of 7,452 weekday unlinked trips. This is a 42.7 percent increase in annual passenger miles and 27.2 percent increase in annual unlinked trips over the past 10 years.

**Table 3.10: Iowa City Transit Annual Passenger Miles and Unlinked Trips**

Iowa City Transit	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Annual Passenger Miles	2,828,918	3,237,192	3,231,674	3,241,656	4,359,208	4,070,134	4,344,768	3,884,748	3,992,575	4,036,682
Annual Unlinked Trips	1,545,069	1,569,488	1,575,434	1,707,935	1,749,416	1,918,013	2,058,293	1,889,152	1,947,475	1,965,419

Source: National Transit Database, Federal Transit Authority

### 3.6 Coralville Transit

Coralville Transit operates fixed-route services within Coralville, North Liberty and Downtown Iowa City and the University of Iowa Hospitals and contracts out ADA paratransit service to Johnson County SEATS. North Liberty contracts with Coralville for fixed route service. Coralville Transit is owned and operated by the City of Coralville and is governed through the City Administrator to the Transit Manager. Coralville operates six fixed routes, shown in **Figure 3.3**, with a service area that covers 12 square miles and a population of 19,219. Fixed-route service is operated weekdays from 6:00 a.m. to 6:30 p.m. with one route until 7:30 p.m. and one route until 11:55 p.m. and Saturdays from 7:15 a.m. to 7:30 p.m. There is currently no Sunday service. Service frequencies vary by route between 30 minutes and 60 minutes depending on the route and time of day. One-way fares are \$1.00 for adults, \$0.75 for youth (5 to 15 years old), and free for children under five. Coralville Transit provides several options for passes including a 31 day pass for \$32.00 and 20-ride pass for \$20.00. The subsidy depends on several factors, most importantly the issuance of a University of Iowa parking pass of certain types. Coralville Transit also provides Bus and Shop coupons. If patrons spend \$10.00 at participating retailers, they are eligible to receive a free pass for one ride. In 2012, Coralville Transit reported 2,200,497 passenger miles and



611,123 annual unlinked trips, an average of 2,238 weekday unlinked trips. This is a 36.4 percent increase in annual passenger miles and 28.7 percent increase in annual unlinked trips since \*2006.

**Table 3.11: Coralville Transit Annual Passenger Miles and Trips**

Coralville	2006	2007	2008	2009	2010	2011	2012
Annual Passenger Miles	1,613,690	1,974,110	2,092,952	2,063,532	1,973,997	2,043,354	2,200,497
Annual Unlinked Trips	474,941	500,207	505,345	547,841	527,220	567,581	611,123

Source: National Transit Database, Federal Transit Authority

\*2006 is the first year data reported.

### 3.7 University of Iowa CAMBUS

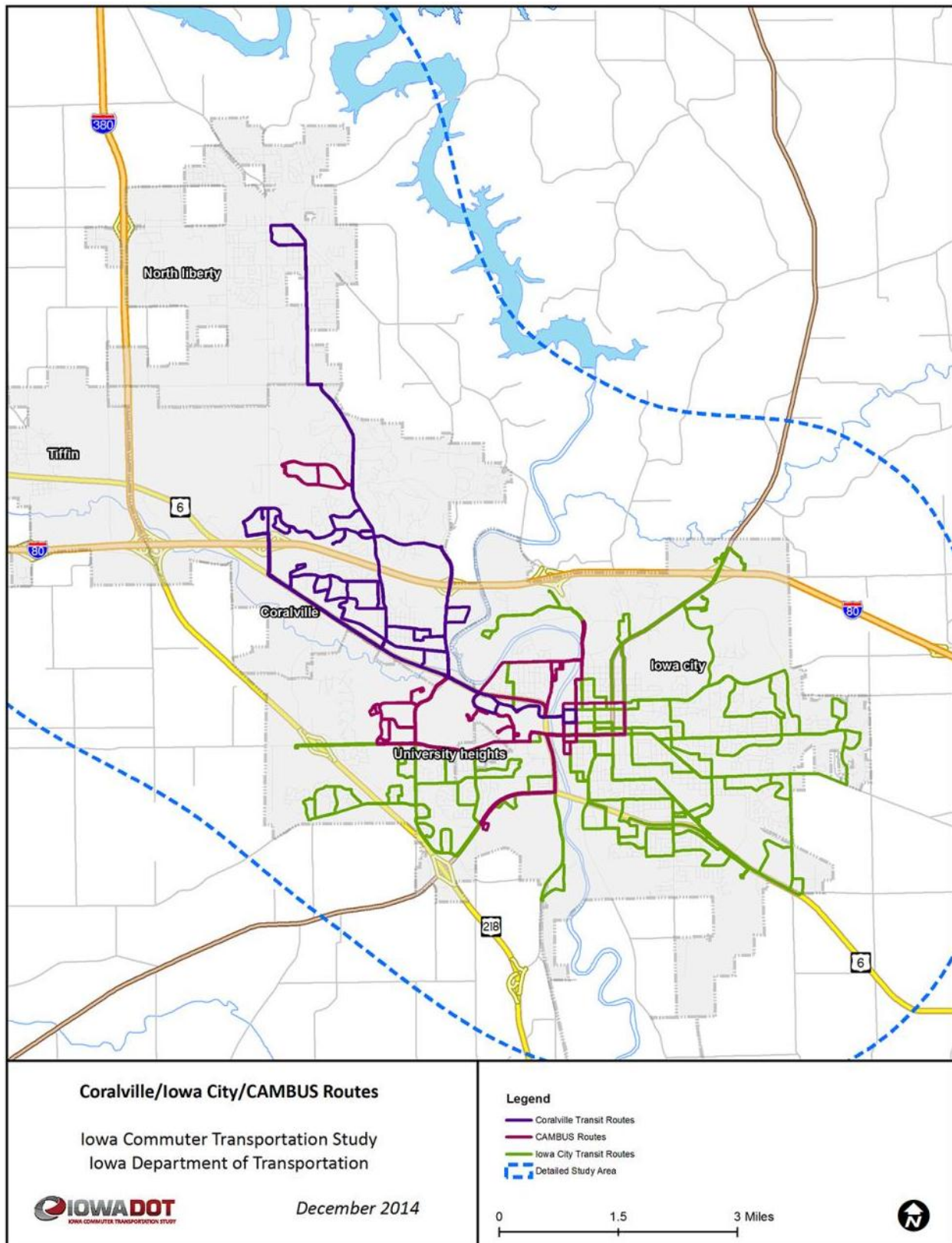
Cambus is a University of Iowa service operated by students. Cambus serves students, faculty, staff and the general public. Cambus operates 15 fixed routes, shown in **Figure 3.3**, with a service area of 30 square miles throughout the University of Iowa Campus and portions of Iowa City and Coralville and demand-response door-to-door ADA complementary paratransit service through the Bionic Bus. Fixed-route service is operated weekdays from 6:25 a.m. to 12:40 a.m. and weekends from 11:40 a.m. to 12:40 a.m. Service frequencies vary by route and time of year. During the school year, service frequencies range between 10 minutes and 15 minutes during the week and 30 minutes on the weekend. Cambus does not charge a fare to ride and its services are available to the general public. Cambus is a prepaid system funded in part by student fees. Students, faculty and staff may contribute additional money by checking "Cambus" on the optional fee cards which are distributed each year. In 2012, Cambus reported 4,367,908 annual unlinked trips and an average of 16,414 weekday unlinked trips. This is a 7.5 percent increase over 2011 and a 23.6 percent increase over the past 10 years.

**Table 3.12: Cambus Annual Passenger Miles and Trips**

Cambus	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Annual Passenger Miles	4,069,903	4,253,450	4,319,095	4,274,744	4,486,979	4,499,424	4,840,700	4,797,274	4,949,681	5,326,366
Annual Unlinked Trips	3,532,185	3,578,270	3,583,116	3,544,690	3,706,978	3,718,335	4,000,282	3,964,630	4,061,485	4,367,908

Source: National Transit Database, Federal Transit Authority

Figure 3.3: Iowa City Transit, Coralville Transit, and University of Iowa Campus Routes



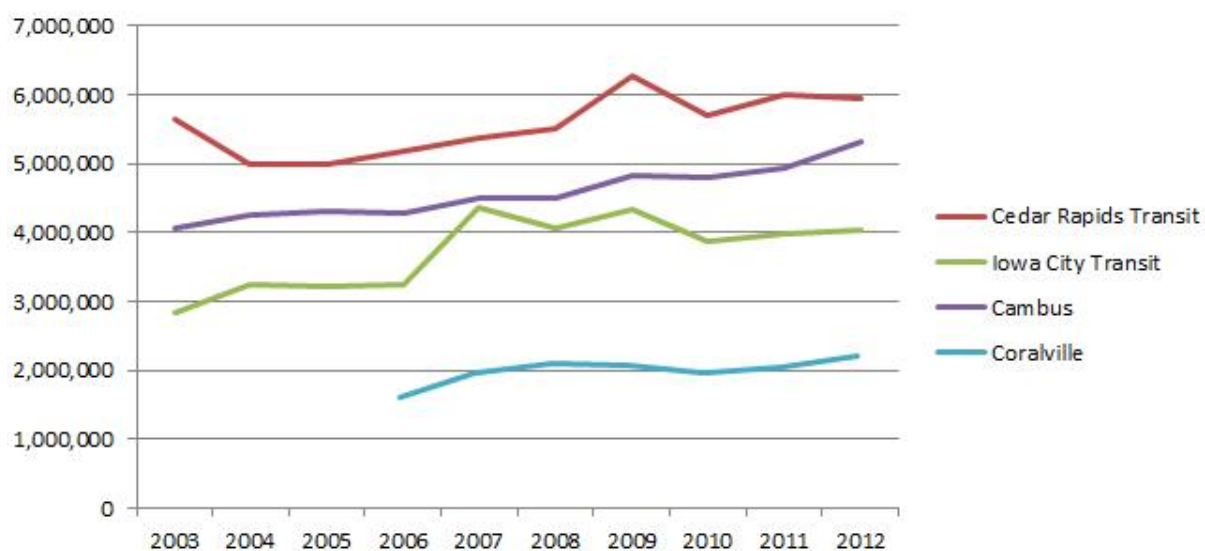
\*Note, North Liberty contracts service from Coralville Transit

## 3.8 Comparison Services

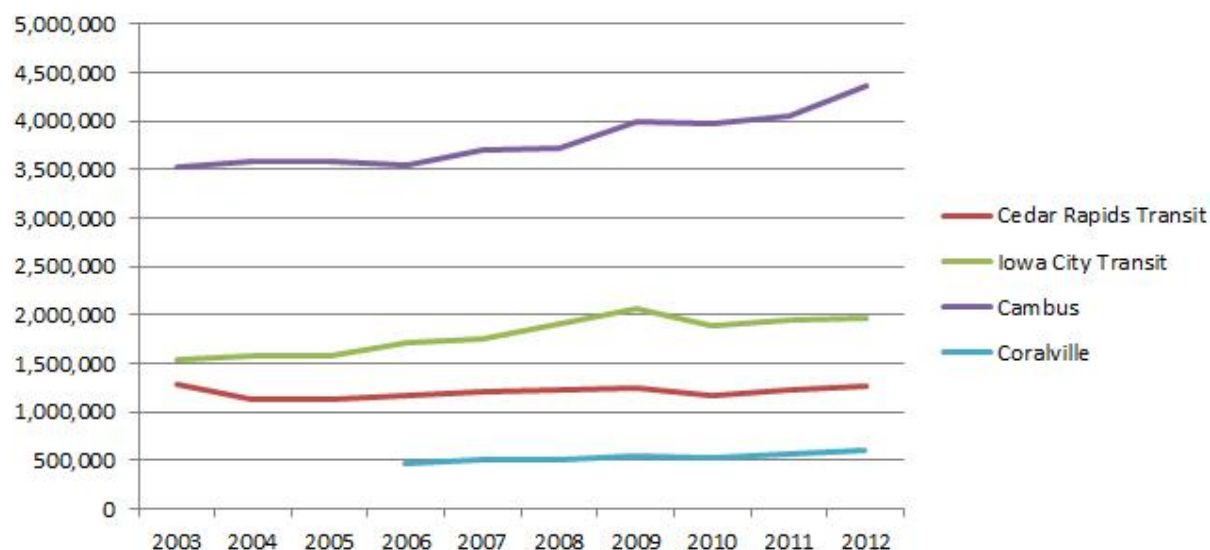
### 3.8.1 Comparison of Fixed Route Services

**Figures 3.4 and 3.5** below provide a summary comparison of fixed route services based on annual passenger miles and annual unlinked trips from 2003 to 2012. As shown, Cedar Rapids Transit has the highest annual passenger miles and the third lowest annual trips. Passenger miles is a reflection of the large service area that Cedar Rapids Transit covers. This is compared to Cambus, who has the highest number of unlinked trips and second highest passenger miles. All of the urban fixed route service providers have had steady growth in both passenger miles and annual linked trips over the past 10 years.

**Figure 3.4: Annual Passenger Miles for Urban Fixed Route Providers**



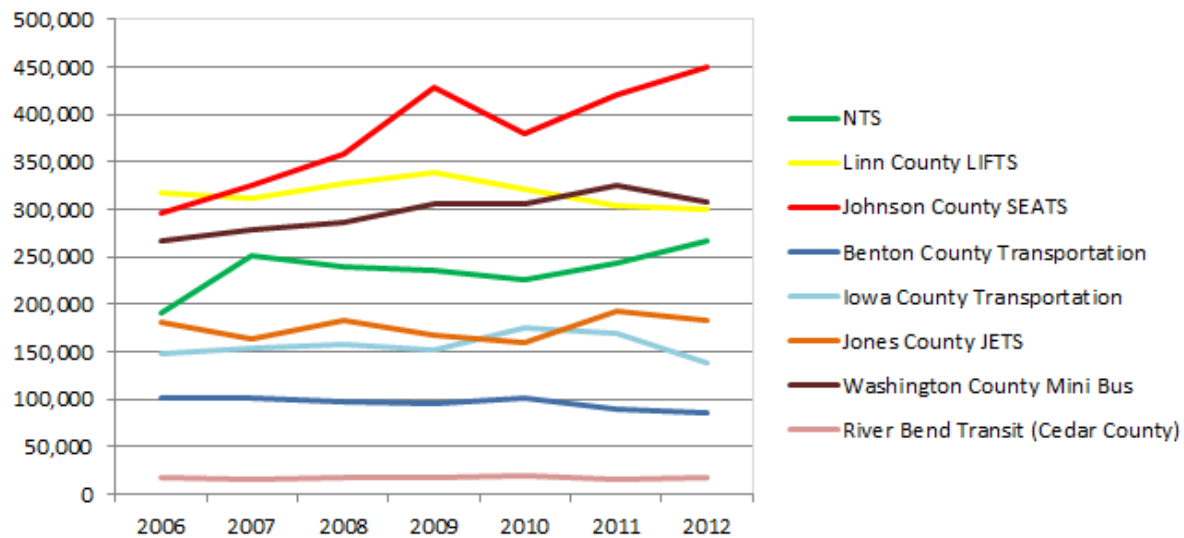
**Figure 3.5: Annual Unlinked Trips for Urban Fixed Route Providers**



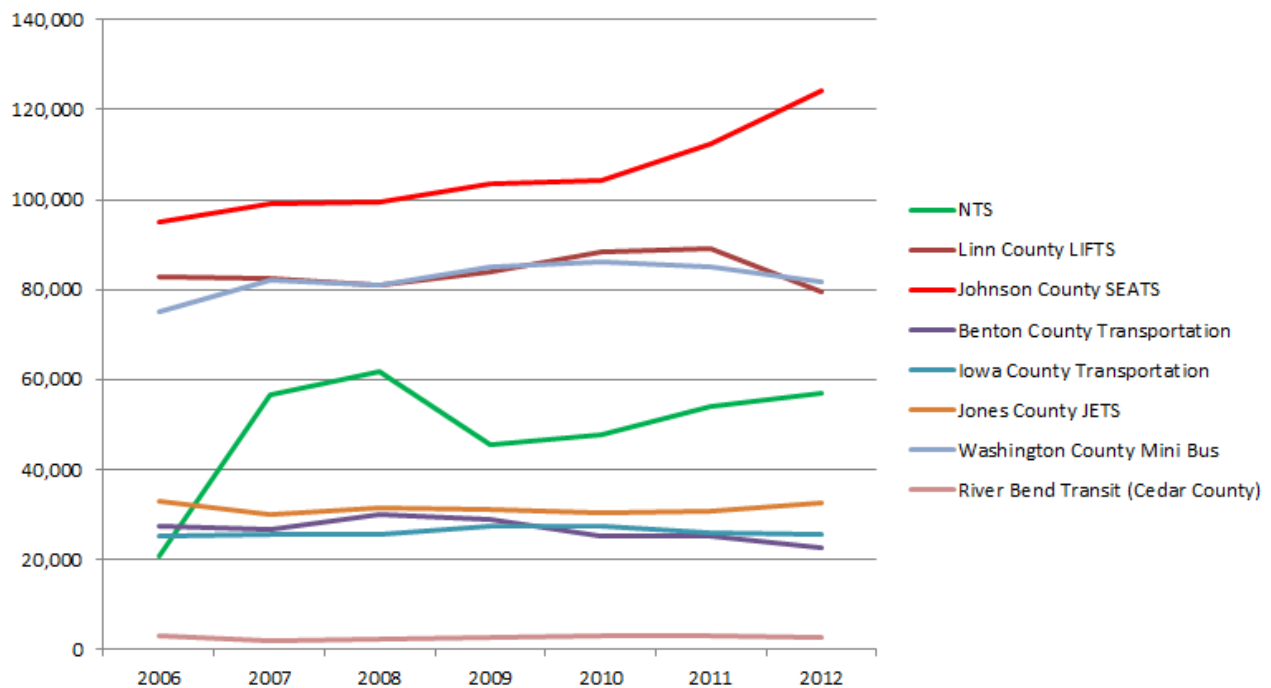
### 3.8.2 Comparison of Demand Response Services

Figures 3.6 and 3.7 below provide a summary comparison of demand route services based on annual revenue miles and trips from 2006 to 2012. As shown, Johnson County SEATS has the highest annual passenger miles annual trips followed by Linn County LIFTS and Washington County Mini Bus.

**Figure 3.6: Annual Revenue Miles for Demand Service Providers**



**Figure 3.7: Annual Trips for Demand Service Providers**



### 3.9 University of Iowa Bus Pass Program

The University of Iowa sells a bus passes for Iowa City Transit and Coralville Transit. These service providers sell the passes to the University at a discounted rate and then the University sells them to its students and employees at a significant subsidized rate. Approximately 98% of all University passes are subsidized. See **Table 3.13** below.

**Table 3.13: University of Iowa Bus Pass Program**

	University of Iowa buys for	University of Iowa Subsidized Rate	University of Iowa Non-Sub Rate
<b>Iowa City Transit</b>			
University of Iowa Faculty/Staff	\$28/mo.	\$15/mo.	\$28/mo.
University of Iowa Student*	\$20/mo.	\$14/mo.	\$20/mo.
<b>Coralville Transit</b>			
University of Iowa Faculty/Staff	\$28/mo.	\$15/mo.	\$28/mo.
University of Iowa Student*	\$20/mo.	\$14/mo.	\$20/mo.

*\*Student passes are an annual pass that can be purchased and cancelled throughout the year. Students pay the prorated cost of the pass at time of purchase. The table shows the cost of the student pass on a monthly basis.*

### 3.10 Comparison of Public Transportation Service Schedules

**Table 3.14** on the following page provides a general comparison of service hours in each of the study area counties. The urban service providers, Cedar Rapids Transit, Coralville Transit, Iowa City Transit and the University of Iowa Cambus have the longest service hours accommodating multiple types of trips (work trips, student trips, and other needs). Cedar Rapids in Linn County has the most schedule coverage, due to Neighborhood Transit Services, which provides supplemental demand-response evening and weekend service when Cedar Rapids Transit is not operating. The remainder of the service providers offer demand-response services meeting specific community needs, primarily paratransit service for the disabled and elderly residents. These do include some work trips, however, the biggest trip needs addressed by the rural service providers include trips for medical appointments, shopping, and other intermittent needs that can be scheduled in advance.

**Table 3.14: Generalized Schedules for Study Area Public Service Providers**

Study Area Counties	Service Provider	Service Type	Weekdays																								Weekends								
			Early Morning					AM Peak					Mid-Day					PM Peak					Evening					Saturday				Sunday			
			12AM	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	12PM	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Early Morning	Morning	Afternoon	Evening	Early Morning	Morning	Afternoon	Evening	
Linn County	Cedar Rapids Transit	Fixed- Route																																	
	Linn County LIFTS	Demand- Response																																	
	Neighborhood Transportation Services	Demand- Response																																	
Johnson County	Coralville Transit	Fixed- Route																																	
	Iowa City Transit	Fixed- Route																																	
	*Johnson County SEATS	Demand- Response																																	
	University of Iowa Campus	Fixed- Route																																	
Benton County	Benton County Transportation	Demand- Response																																	
Jones County	Jones County JETS	Demand- Response																																	
Iowa County	Iowa County Transportation	Demand- Response																																	
Cedar County	River Bend Transit	Demand- Response																																	
Washington County	**Washington County Minibus	Demand- Response																																	

This table represents generalized schedules for illustrative purposes. For more specific description of schedules by agency as of September 2014, refer descriptions provided in Section 2.0 or contact individual service providers directly.

\*Schedule varies by communities served. Table reflects Iowa City and University Heights. For other Johnson County cities, refer to Section 2.3.2.

\*\*Thursday service is also available from 5:00pm to 9:00pm



### **3.11 Private Transportation Services**

The study area is served by numerous private transportation providers. Private transportation services include privately owned and operated vanpools, carsharing, private intercity bus operators, taxis and other private providers such as medical shuttles. These modes are distinct from public transportation services in that they may be open to a select segment of the population such as employees of a particular company or through a private subscription service. In other cases, these services are open to anyone in the general public but are private, for-profit operations.

#### **3.11.1 Private Vanpools and Carpools**

Carpooling is an arrangement between people two or more people to make a regular commute in a single vehicle. Vanpooling is an arrangement whereby commuters travel together in a van. Both allow groups of employees who live and work near one another to share a ride to work. In some cases, employers may provide the vans or subsidize the cost and maintenance of the vans. In other cases, the employees may pool their resources to share in the cost of the van. Either way, the benefits of vanpools are a significant savings for the employee, providing a dedicated means of transportation to work, reducing parking needs for the employer, and relieving congestion on roads. Current private vanpools are described below.

##### ***eRideshare***

An “Iowa Commuter/Carpool Center” is available through eRideShare.com. An interested commuter uses the site by: 1) Signing up for a membership, 2) Place a listing, and 3) Search listings from the home page, using the blue search box (search tips). Reply to other listings by clicking on the link for the listing.

##### ***University of Iowa Employee Vanpool and Carpool***

The University of Iowa Employee Vanpool is a program provided by the University of Iowa Parking and Transportation Department. University-owned vans are provided to groups of faculty and staff to facilitate carpooling. Seven to 15 University faculty and staff can ride together to and from work in a commuter van. Fees range from \$40.00 to \$172.00 per month depending on the space in the vehicle and the distance traveled. A volunteer driver rides for free in exchange for driving and being responsible for the van. The vanpool program serves 24 communities over 9 counties and runs to and from the University at regular agreed upon times by the vanpool riders. Emergency rides home are provided through a separate program to those participating in the Vanpool Program. Currently, the program is only open to University employees. As of September 2014, the University has 68 vans in operation with five extra to use as loaners providing rides to 693 commuters with a capacity to serve 730.

The University of Iowa also provides a carpool program and matching service for faculty, staff and students. Current parking permit holders who want to share the driving with another University faculty/staff or student can exchange their parking permit for a carpool arrangement. The permit holder still retains rights to their permit and pays the permit fee, however, the people they carpool with can take turns driving in the carpool. The matching service helps people locate others interested in carpooling, however, those in the carpool coordinate with one another on ride arrangements.



### ***vRide***

vRide is a private ridesharing service setting up vanpools across the country for the past 30 years. vRide leases vans to the pool and takes care of registration and vehicle maintenance cost. A volunteer member of the pool drives and services the van. Fees range from \$100 to \$200 per month depending on the size of the vehicle, the space in the vehicle, and the distance traveled. The vRide service includes web tools and mobile applications that provide commuters information about vRide vans operating along their route and the number of seats available. vRide is the nation's largest provider of commuter vanpooling with 6,500 vans. As of September 2014, vRide operates six van pools (soon to be seven) within the study area providing rides to 48 commuters (soon to be 55). Of the six vans operating, five are currently at capacity and one van has 2 open seats. Currently, all vRide vanpools go to the VA Medical Center, however, vRide has recently received inquiries from employees of another major employer in the region.

### **3.11.2 Carsharing**

Carsharing is a model of car rental where people rent cars, typically from a private company, for short periods of time, typically by the hour. They are attractive to users who only need occasional use of a vehicle.

### ***Zipcar***

Zipcar is a private carsharing service and is an alternative to a traditional car rental. The Zipcar service is available within Iowa City to local residents and University of Iowa students, faculty and staff. Zipcar members can reserve a car online by the hour or the day making the service ideal for those who need a car occasionally for errands or day trips. Zipcars are available 24 hours a day, seven days a week. Gas, insurance, maintenance and reserved parking spots are included with the service. Discounted rates are available to University of Iowa students. At this time, there is a one-time \$25.00 application fee and \$50.00 annual membership fee. University students and employees have the application fee waived and pay a \$25.00 annual membership fee. Discounted hourly rates start at \$7.00 per hour or \$66.00 per day (prices vary on type of model). Zipcar launched in Iowa City in 2012 with six vehicles on campus and an additional four vehicles throughout the City.

### **3.11.3 Intercity Bus Transportation Providers**

Intercity Bus service is regularly scheduled bus service for the general public that operates with limited stops over fixed routes connecting two or more urban areas not in close proximity or connecting one or more rural communities with an urban area not in close proximity.

Burlington Trailways is the only intercity bus provider in the study area providing service between Cedar Rapids and Iowa City. Other intercity transportation service from Cedar Rapids and Iowa City includes one daily trip to Des Moines and three daily trips to Chicago. Currently, the only Megabus stop in the study area is in Iowa City.

### ***Burlington Trailways***

Burlington Trailways is a private intercity bus operator based in West Burlington, Iowa. Burlington Trailways provides direct service to more than 40 locations in Iowa, Illinois, Nebraska, Colorado, Missouri and Indiana. Burlington Trailways offers scheduled intercity service between Cedar Rapids at the Eastern Iowa Airport and Downtown Iowa City at the Court Street Transportation Center. The Eastern Iowa Airport terminal is served by Cedar Rapids Transit Route 11. The Cedar Rapids Transit bus proceeds to Burlington Trailways by request only prior to reaching the Airport.

From Cedar Rapids to Iowa City, there is currently one morning (9:30 a.m.) and one afternoon (2:05 p.m.) trip scheduled. From Iowa City to Cedar Rapids, there is currently one mid-day (11:50 a.m.) and one afternoon (3:50 p.m.) trip scheduled. Estimated travel times range between 35 to 40 minutes. Estimated travel times range between 35 to 40 minutes. As of September 2014, one-way fares are \$10.00.

### **3.11.4 Taxi Providers**

Taxi providers could potentially contract to provide public transportation services and can help fill a gap in services including but not limited to after-hours, emergencies and guaranteed ride home accommodations. Rates may vary by provider, however, as of September 2014, the typical rate is \$3.50 pick-up fee and \$3.00 per mile. Special rates apply for out-of-town service. Generally, most taxi companies provide service 24 hours a day seven days a week. Similar to carsharing, taxi service is ideal for users who need occasional transportation such as trips to the airport, appointments, errands, etc. A sample of full service taxi providers in the study area is provided below:

#### **Cedar Rapids/Marion metropolitan area**

- Century Cab
- American Class Taxi
- Yellow Cab
- Airport Shuttle Service

#### **City of Iowa City/Coralville/North Liberty metropolitan area**

- Airport Shuttle Service
- Aardvark Taxi
- American Taxi Cab
- Big Ten Taxicab
- City Cab
- Discount Cab Services
- Gold Top Taxi
- Independent Taxi
- Jowan Taxi Cab
- King Taxi Cab
- Marcos Taxi Co.
- Number One Cab
- Red Line Cab

- Yellow Cab
- Pink's Taxi
- Big Ten Taxi
- Big Ten Taxi Cab North
- Ok Partners Transportation

### **3.11.5 Other Private Transportation Providers**

#### ***Disabled American Veterans Van Rides***

The Disabled American Veterans (DAV) organization provides medical transportation service to scheduled appointments from the study area and surrounding region to the Iowa City Veterans Administration Medical Center (VAMC) as well as other VA medical facilities and clinics. DAV service does not serve non-ambulatory individuals. The vehicles are driven by volunteers.

#### ***Norse Transport***

Norse Transport provides non-emergency wheelchair accessible transportation throughout the Cedar Rapids metropolitan area. Hours of operation are 7:00 a.m. to 5:00 p.m. by appointment.

#### ***Riders Club of America***

Riders Club of America is a volunteer service that provides transportation for any destination within the Cedar Rapids metro area 24 hours a day, seven days a week. Riders must be 55 years of age or older or have a medical condition that prevents driving. Reservations are required at least 24 hours in advance.

#### ***Special K's Transport***

Special K's Transport provides wheelchair accessible transportation to medical appointments, church services and special events within the Cedar Rapids metro area 24 hours a day, seven days a week. Riders must be 55 years of age or older or have a medical condition that prevents driving.

#### ***To The Rescue***

To The Rescue provides wheelchair and non-wheelchair (ambulatory) transportation for medical appointments, special events or other personal needs. All Drivers are certified caregivers who are capable of assisting individuals before, after and during transit. To The Rescue is a full service home health care company with staff available to assist a wide range of needs.

### **3.11.6 Commuter Infrastructure**

Commuter infrastructure includes existing and planned park and rides and major transit centers/hubs within the Study Area that could help facilitate convenient and efficient interregional connections.

#### ***Iowa DOT Park and Ride Facilities***

Iowa's existing system of state-owned park and ride lots consists of 26 facilities in 22 counties. Many of these existing lots were developed during the 1980s, primarily in response to a growing demand that resulted from an increase in fuel prices. In most cases, lot development was truly the result of grassroots efforts, with Iowa DOT's district offices often responding to specific public requests for park and ride facilities. Very basic lots were provided, frequently sharing space with material storage locations on state right of way. Existing state-owned park and ride facilities within the study area consist of the following:

- US 30 & US 218 (NW Quad) in Benton County
- US 6 & V77 in Iowa County
- IA 21 & IA 212 in Iowa County

The Iowa Park and Ride System Plan (PRSP) conducted by the Iowa DOT was used to plan, evaluate, and develop a formal statewide system of park and ride facilities. The PRSP provides a framework for determining the need for commuter park and ride services, evaluating the existing system, identifying gaps in service, and guiding potential system expansion. The primary objective of the plan was to develop a location-specific, priority-based park and ride system that allows for coordinated planning and implementation of park and ride facilities that maintain highway safety, encourage ridesharing, support commuter transportation, and promote energy conservation.

Park and ride facilities are an important part of the commuter transportation system because they provide a convenient location along or near the primary commuting corridor, in this case I-380, to park and connect to commuter transportation. This may include vanpools, carpools, intercity bus and/or fixed-route bus service. The PRSP includes an analysis of the top 25 county pairs for residence-to-workplace commuter flows based on 2006-2010 American Community Survey census data. Cedar to Johnson, Linn to Johnson, Jones to Linn, and Washington to Johnson are among the top county pairs. The PSRP has provided a more systematic, data-driven approach to the identification of candidate locations across the state for park and ride facilities.

#### ***Major Transit Centers/Hubs***

Major transit centers/hubs are critical to providing efficient and effective fixed-route interregional transportation service because they provide a collection and distribution point and typically access major routes within the local transit network. In some cases, these are intermodal transit hubs with access to multiple transportation modes, commuter parking and in some cases shopping and services.

### *Cedar Rapids Transit Ground Transportation Center*

The Cedar Rapids Transit Depot was renovated after being damaged in the 2008 flood and completed in 2013. The redesigned facility connects all of Cedar Rapids Transit's 12 routes and allows city buses to park around the perimeter of the building and depart without backing into traffic. The project included conversion of 4th and 5th Avenues from one-way to two-way traffic between 1st and 3rd Streets to provide more efficient bus circulation and provides improved accessibility for both pedestrians and passengers with wheelchairs. This facility provides connections to Cedar Rapids Transit major routes. The renovation project cost \$10.5 million and was paid for through \$1.5 million from Federal Emergency Management Agency (FEMA) disaster funds, \$7.4 million from the Federal Transit Administration (FTA) and \$1.6 million from local option sales tax revenue.

### *Coralville Intermodal Facility*

The planned Coralville Intermodal Facility located in Iowa River Landing will begin construction in 2014 and be complete by 2015. This facility will allow commuters to park their vehicles and connect to the Coralville bus system. The facility provides a central transfer point for Coralville's bus system and includes enclosed passenger waiting areas. The facility will also cater to bicycles with secured lockers, restrooms and showers as well as maintenance and rentals thorough the Iowa Bicycle Coalition. The facility includes a three-level parking garage with 270 spaces dedicated to commuter parking and 174 retail spaces. The project is being funded in part through a \$6.5 million grant from FTA.

### *Court Street Transportation Center*

The Court Street Transportation Center is a multi-use, multi-modal transportation center located in Downtown Iowa City. The center includes six levels of parking accommodating 650 vehicles, an intercity bus facility, an 8,000 square foot daycare center, bistro, and covered bicycle parking. The center functions as a park and ride facility operated through Iowa City Transit and is served by one outbound and two inbound bus stops. These stops are serviced Monday through Friday from 5:45 AM to 11:20 PM by three daytime routes (Lakeside, Mall, Free Shuttle) and two night routes (Lakeside and Night Broadway). This results in 120 buses servicing this location daily. On Saturdays, two routes (Lakeside and Saturday Broadway) provide service to these locations between the hours of 5:45 AM to 7:40 PM. Each Saturday, 40 buses service these stops. The center was funded through an FTA grant.

### **3.11.7 Summary**

All of the counties within the study area have some type of public transportation service. Within small communities and rural areas, most of the service is demand-response targeted to seniors and persons with disabilities and special needs, although all of these services are open to the general public. Cedar Rapids, Iowa City and Coralville provide public transportation service with dedicated fixed-routes, relatively frequent service at peak periods, and long service spans meeting the needs of employers, students and others in need of public transit services. Where gaps have occurred, organizations such as NTS were created to address unmet needs. In this case, NTS provides service to work, school, or life skill classes after hours when Cedar Rapids Transit is not operating.

Currently, there is limited public interregional transportation service. Some of the ECIT service providers and River Bend Transit offer out of county demand-response service to Iowa City, however, these trips are generally for medical purposes, although the service is open to the public. Private transportation providers that offer interregional service include the University of Iowa and vRide vanpools, Burlington Trailways intercity bus service and various private providers including taxi companies and other shuttle services. The University of Iowa vanpool service is limited to University employees. vRide vanpools are subject to availability of seats, although new vanpools can be set up by individual groups interested in forming a new pool. Burlington Trailways is currently limited to two trips between Cedar Rapids Eastern Iowa Airport and Downtown Iowa City. Therefore, based on existing service gaps, there may be opportunities for expanded interregional public transportation service within the study area. This interregional service would need to be open to the general public, connect major employment and activity centers, and have a service span and frequency to address typical work trips.

## 4.0 Service Improvement Packages

The transportation service improvements are to be limited to those that can reasonably be implemented by the Iowa DOT and or communities in the study area. Additionally, the transportation service improvements are to focus on the I-380 corridor and address longer distance inter-regional commutes.

Based on an initial assessment of needs and opportunities in the I-380 corridor the team has concluded that instead of the traditional transportations alternatives, service improvement packages should be identified that combine primary modes with supporting elements such as park and ride lots. It was concluded that there should not be mutually exclusive options; rather multiple options are needed to serve the needs of this diverse commuter corridor.

Based on this initial assessment and drawing from commuter transportation projects in similar corridors the following primary public transportation and ridesharing modes were identified:

- **Public Bus Transportation:** Transportation open to the public, may be demand response service requiring advanced scheduling, or fixed route with a set schedule, usually provided by a public entity. Also referred to as public transit.
- **Private Bus Transportation:** Bus transportation specifically provided for a predefined group of commuters such as employees of a particular organization. This mode is sometimes referred to as a “buspool.”
- **Vanpooling:** Passenger vans often supplied by employers, non-profit organizations or public agencies, driven by one of the vanpool participants. Vanpools typically have ten to sixteen participants with similar origins and destinations.
- **Carpooling:** An informal or formal sharing of rides using one of the participant’s private automobile. Carpooling typically has two to six participants with similar origins and destinations.
- **Intercity Bus Transportation:** Regularly scheduled bus service that operates with limited stops over fixed routes, connecting two or more urban areas not in close proximity.
- **Commuter Rail:** Passenger rail service using existing railroad tracks that would run between Cedar Rapids and Iowa City as previously defined in the *Cedar-Iowa River Rail Transit Project Feasibility Study*.

These modes can vary greatly in terms of service characteristics (routes, speed and travel time, trip frequency, etc.), operation and management, and funding requirements. A summary of the key characteristics (market, service attributes, vehicle type, etc.) of each service type is provided in **Table 4.1** on the following page.

These preliminary modal approaches were presented to the ICTS Advisory Group and interested members of the public and project stakeholders in September and early October 2014. Based on this input, the project team found these options to be inclusive of reasonable approaches. The initial needs survey conducted in late September and early October of 2014 found that respondents suggested rail transit (72 responses) be considered. It was therefore concluded that commuter rail should be included in the evaluation.



**Table 4.1: Alternative Service Package Characteristics**

Alternative	Market	Service Attributes	User Schedule Flexibility	Vehicle Type	Vehicle Ownership and Driver	Funding and Financing	Institutional/ Governance	User Cost (Fare) Range	Public Cost Range
<b>Public Bus Transportation</b>	General public; commuters	Premium service - limited stop express Scheduled, fixed route	Flexible with multiple scheduled trips	40 seat transit bus or smaller vehicle	Public vehicle Paid driver	Public funding 50% to 85% typical Eligible for federal and state funding	Special purpose public agency or local or county government	\$6 - \$10 round trip	High for capital and operating costs
<b>Private Bus</b>	Specific group	Tailored to specific destinations Schedule and timing set by subscription	Limited flexibility - individual's schedule must match others'	41 seat transit bus or smaller vehicle	Privately owned vehicle Paid driver	Bus chartered or leased by private firm	None	Unknown	Low
<b>Intercity Bus</b>	General public, usually not commuters.	Scheduled fixed route service not designed for commuters	Limited flexibility - individual's schedule must match limited schedule	Typically 40 to 50 passenger coach	Privately owned vehicle Paid driver	Private for profit transportation firm	Private enterprise Usually regulated	\$10 per trip	Low
<b>Vanpooling</b>	Specific group	Tailored to specific origins and destinations	Nor flexible - individual's schedule must match others'	10 to 16 passenger van	Privately owned or leased van Driver a vanpool participant	Vehicle ownership costs may be funded by grants or public entity Operating costs covered by user fees	None required Public agencies may support programs	Varies by provider \$40 to \$200 per month	Low
<b>Carpooling</b>	General public; commuters	Tailored to specific origins and destinations	Nor flexible - individual's schedule must match others'	Private auto, sedan	Privately owned auto Driver a carpool participant	No external funding required for carpool	None required Public agencies may support programs	Varies by trip length and number of participants	Low
<b>Commuter Rail</b>	General public; commuters	Premium service - limited stop express Scheduled, fixed route	Flexible with multiple scheduled trips	Passenger rail car	Public vehicle Paid driver	Public funding 50% to 85% typical Eligible for federal and state funding	Special purpose public agency or local or county government	\$6 - \$10 round trip	High for capital and operating costs

## 4.1 Other Transportation Service Improvement Package Elements

The primary modal approaches have been combined with other elements that are intended to increase the effectiveness of the primary modes but also serve to expand the options for consideration. These other elements include:

- **Park and Ride Facilities:** These are convenient locations along or near the primary commuting corridor to park private autos and connect to some form of public or private transportation which may include vanpools, carpools, and public bus service.
- **Regional Commuter Travel Information:** This is a readily accessible and comprehensive source of information on all commuter transportation options in a defined area. Information includes routing, pick-up points, schedules, fares and fees, and other information necessary for commuters to make decisions regarding mode of travel.
- **Transit Priority Measures:** These are transportation engineering tactics intended to make public transit and ridesharing more attractive to potential users by reducing travel time and improving reliability. Priority measures include strategies such as dedicated transit or high occupancy vehicle (HOV) lanes, bus-on-shoulder operation, traffic signal priority and queue jump lanes.
- **Guaranteed Ride Home:** This service is used in conjunction with public transportation and rideshare options to provide a ride home in case of an emergency (illness, personal crisis), usually a cab ride that is reimbursed up to a certain amount.
- **Destination End Parking:** Vanpooling and carpooling require parking on the destination end, preferably preferential parking to make ridesharing more attractive. This may include free or reduced cost parking closer to the final destination. Public bus transportation does not require parking on the destination end.
- **Destination End Circulation:** This is circulation provided by local transit or shuttles to allow commuters to complete the trip between the drop-off point and their final destination. Vanpools and carpools usually do not require this supplemental service, but it may be required for public bus transportation if the drop off point is remote from final destinations.

**Table 4.2** on the following page provides a summary of needed transportation service improvements for each mode. Note: commuter rail was addressed on the analysis completed as part of the *Cedar-Iowa River Rail Transit Project Feasibility Study*.

**Table 4.2: Transportation Service Improvements by Mode**

Primary Mode	Park and Ride Lots	Transit Priority Measures	Destination End Parking	Destination End Circulation	Regional Transportation User Information System
Public Bus Transportation	Preferred	Preferred; can make transit more attractive and competitive with auto travel	Not necessary	Required	Preferred to publicize service and provide commuters information on options
Private Bus	Preferred	Limited value due to low volume	Not necessary	Not necessary	Not necessary
Intercity Bus	Preferred	Not necessary	Not necessary	Not necessary	Preferred to publicize service and provide commuters information on options
Vanpooling	Preferred	Required; preferential parking preferred	Required; preferential parking preferred	Not necessary	Preferred to publicize service and provide commuters information on options
Carpooling	Preferred	Required; preferential parking preferred	Required; preferential parking preferred	Not necessary	Preferred to publicize service and provide commuters information on options
Commuter Rail	Preferred	Commuter rail on dedicated alignment	Not necessary	Required	Preferred to publicize service and provide commuters information on options

In addition to the Regional Transportation User Information System, carpool and vanpool programs also require ridematching software. The software facilitates the formation of pools of commuters by allowing interested commuters to submit their origins, destinations, and work hours to a database which automates the process of matching commuters with similar patterns.

## 4.2 Initial Evaluation

The purpose of the initial evaluation is to evaluate the range of public transportation service options to identify the package of improvements that most effectively address the commuter transportation needs. The initial evaluation is followed by a detailed evaluation of the preferred package of improvements to identify the preferred service and operating plan.

### 4.2.1 Advantages and Disadvantages

The following is an initial comparative evaluation of the Service Improvement Packages citing general advantages and disadvantages of each. A more detailed evaluation follows.

#### Public bus transportation

##### *Advantages*

- Higher capacity with bus capacity of 40 to 50 and multiple trips
- Multiple trips provide greater flexibility for starting and ending work shift times
- Greater flexibility because everyday use is not an expectation; convenient for occasional trips
- Does not require formation of commuter groups; less social
- Uses professional drivers; may be more reliable and safe in inclement weather

##### *Disadvantages*

- Higher capital and operating costs
- Usually requires significant public funding
- Requires a public agency for administration and management; such an agency does not currently exist
- Usually has longer overall travel times
- May not be able to provide direct service on destination end

#### Private bus transportation

##### *Advantages*

- Higher capacity with bus capacity of 40 to 50 and multiple trips
- Can be tailored to specific employee and employer needs
- Greater flexibility because everyday use is not an expectation
- Does not require formation of commuter groups; less social
- Uses professional drivers; may be more reliable and safe in inclement weather

##### *Disadvantages*

- Higher capital and operating costs
- Usually requires significant private and/or public funding
- Requires commitment from a group of 20 to 50 commuters
- Requires administration and management, usually by the employer
- Closed system, generally not open to the public

#### Vanpooling

##### *Advantages*

- Lower cost; some vanpools do not require external funding
- Can be tailored to specific employee and employer needs
- Can provide direct service on destination end

*Disadvantages*

- Lower capacity with van capacity of 8 to 16
- Requires commitment from a group of 10 to 16 commuters
- Unattractive to some commuters because it is a social group
- Limited flexibility for starting and ending work shift times
- Requires administration and management, usually by the employer or a public agency

**Carpooling***Advantages*

- Lower cost; most cost effective approach
- Tailored to specific employee needs
- Can provide direct service on destination end
- Requires little or no administration and management; can be very informal

*Disadvantages*

- Lower capacity
- Requires commitment from two to six commuters
- Unattractive to some commuters because it is a social group
- Limited flexibility for starting and ending work shift times

**Intercity bus transportation***Advantages*

- Higher capacity with bus capacity of 40 to 50 and multiple trips
- Greater flexibility because everyday use is not an expectation
- Does not require formation of commuter groups; less social
- Uses professional drivers; may be more reliable and safe in inclement weather
- Usually provided by a private for profit company (e.g., Burlington Trailways)

*Disadvantages*

- Higher user cost (fares) not suitable for commuters
- Service is designed for non-repetitive longer-distance trips
- Usually does not provide direct service on destination end

**Commuter rail***Advantages*

- Initial high level of appeal to commuters
- Higher capacity with 140 to 180 seats per car and multiple trips
- Greater flexibility because everyday use is not an expectation

- Does not require formation of commuter groups; less social
- Can be more reliable and safe in inclement weather

#### Disadvantages

- Highest capital and operating costs
- Would require significant public funding
- Requires a public agency for administration and management; such an agency does not currently exist
- Usually has longer overall travel times, especially with proposed low-speed operation
- May not be able to provide direct service on destination end
- Less route flexibility and overall flexibility to respond to changing needs.

Each of the primary modes summarized previously are common with many successful examples in similar corridors around the country. Private bus transportation is more limited, but can be regarded as a larger vanpool (although a professional driver is required). Inter-city bus transportation is already provided in the I-380 corridor, but is not designed for commuter use. Intercity bus more tailored to commuters would have service and other characteristics similar to public bus transportation. For these reasons it is recommended that intercity bus transportation not be evaluated further.

The University of Iowa manages a vanpool program with about 80 vans, including 10 from the Cedar Rapids urban area. But the service is only available to University (and Hospital) employees. vRide, a private for profit company, manages a small number of vanpools in the study area. One example of a vanpool open to the public is operated by Des Moines Area Regional Transit Authority (DART). Their program started in 1995 and now has about 100 vans serving over 900 commuters; 13 of the vanpools operate between Ames and Des Moines. Carpooling in the corridor is mostly informal; carpooling rates are below levels in similar areas.

In Survey #1, 37 percent of respondents making longer commutes (over 20 miles) favored public bus transportation compared with 24 percent carpooling and 20 percent vanpooling. This likely reflects the advantages public bus has, particularly the flexibility and the absence of a commitment to a social group.

## 4.3 Conceptual Service Plans

The detailed evaluation of the service alternatives requires the development of conceptual service plans for each of the service improvement packages. For example, for public bus transportation this will include routes, service frequency, number of vehicles, fares, etc. Vanpooling will include an assessment of organizational structures and whether the program is closed (i.e., specifically for employees of a single employer, or open to the public. Commuter rail service was considered in the evaluation based on input from Survey #1. The technical evaluation developed as part of the *Cedar-Iowa River Rail Transit Project Feasibility Study* provided information on service characteristics, capital costs, operating costs and ridership and was used to inform estimates for this study.

### 4.3.1 Public Interregional Express Bus Service

This 2-way premium express service would operate with a minimum number of stops to minimize travel time and to make the service as competitive as possible with auto commuting. In concept, the service would operate between downtown Cedar Rapids and downtown Iowa City using I-380 and I-80, with stops at North Liberty, Coralville, the University of Iowa Campus and Hospital, and the Iowa City Court Street Transportation Center. It is assumed that the morning southbound trips (serving the Cedar Rapids to Iowa City market) will not stop at the North Liberty park and ride because of the proximity to destinations in Iowa City. The express bus service is intended to serve longer interregional passenger trips. The morning northbound trip (serving the Iowa City to Cedar Rapids market) will stop at all locations. **Figure 4.1** page 75 shows the alignment concept for the route.

The service would rely on park and ride lots as collection points for the dispersed commuter origins and the current transit networks for distribution to destinations not within walking distance of stops. The route would have the following potential stops:

- Cedar Rapids Ground Transportation Center (GTC)
- Kirkwood Community College
- Park and ride near Eastern Iowa Airport (other or additional park and ride lots may be used)
- Park and ride near North Liberty (other or additional park and ride lots may be used)
- Coralville Intermodal Facility
- University of Iowa, Newton Road and Elliot Drive
- University of Iowa Hospitals and Clinics, Hawkins Drive and Hospital Loop Drive
- Iowa City Court Street Transportation Center

It was determined that the express service could achieve a running time of approximately 66 minutes which is about 12 to 13 minutes longer than a comparable auto trip. This ratio of transit time to auto time of 1.25 is well within the range of attractive transit service. Four operating plans with varying service frequency were developed for the express service to illustrate a range of possibilities:

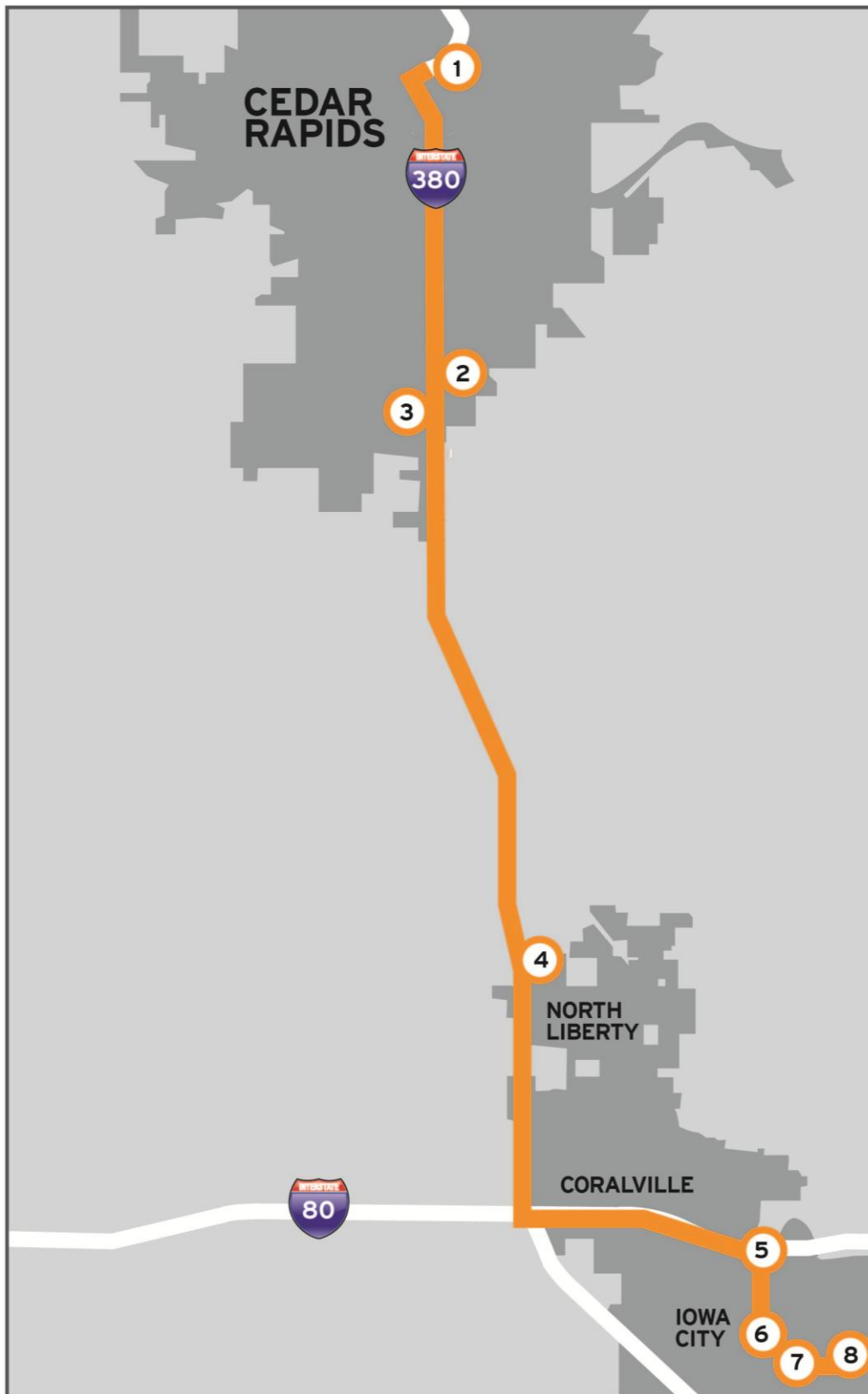
- Bus Option 1, 15 minute service during the peak periods
- Bus Option 2, 30 minute service during the peak periods
- Bus Option 3, 60 minute service
- Bus Option 4, 1 trip during the peak periods



To compare ridership and costs, the commuter rail service options identified in the *Cedar-Iowa River Rail Transit Project Feasibility Study* were used for a new interregional passenger rail service between Cedar Rapids and the Iowa City area through North Liberty. For comparison, cost and ridership figures were adjusted to 2014. This study identified two service scenarios.

- Scenario 1, two morning and two evening trips separated by two hours
- Scenario 2, six morning and six evening trips at 30 minute headways

**Figure 4.1: Conceptual Public Interregional Express Bus Alignment and Stops**



### *Public Bus Operating Plan Options*

For bus options 1 through 3, the service was assumed to operate only during the work week at peak periods, 5 a.m. to 9 a.m. and 3 p.m. to 7 p.m. Midday service would not be operated initially. A guaranteed ride home program could cover the need for occasional commuter travel during the midday period. As the service matures and becomes successful midday service could be added.

More frequent service (i.e., more bus trips) would add transit capacity and convenience. Commuters are very sensitive to service frequency. Survey responses indicated that trips should operate at least every 30 minutes during the peak periods. The proposed service would use standard 40 passenger transit buses. The addition of amenities such as public WiFi and power outlets are popular with commuters and add to the attractiveness of the service. This type of express service has been shown to be effective in attracting commuter trips from lower density outlying residential areas in other metropolitan areas such as the regional K-10 Connector service that runs between Johnson and Douglas Counties in suburban Kansas City.

### *Capital and Operating Costs*

To estimate the operating costs for each service option conceptual service plans were developed considering running time, service frequency and service span. The service plans provided an estimate of the number of vehicles required and the number of vehicle revenue hours. Operating cost was estimated by applying a unit cost per vehicle hour of \$107.35 taken from Cedar Rapids Transit's 2014 operating costs.

Capital costs include the cost of procuring vehicles, facilities for storage and maintenance and the cost of park and ride lots.

### *Estimating Demand for Service*

As part of the analysis of commuter demand leading to the identification of transportation needs, a matrix of commuter origins and destinations was developed for the study area using 2006-2010 CTTP data to estimate commuter demand. This analysis is provided in **Section 2.2** on pages 16 to 23. This analysis concluded that there are 3,371 commuters traveling from the Iowa City Metropolitan Area to the Cedar Rapids Metropolitan Area, and 4,159 commuters travelling from the Cedar Rapids Metropolitan Area to the Iowa City Metropolitan Area during the peak periods, using I-380.

Ridership estimates were prepared using data from the public surveys conducted as part of the ICTS. Several conditional questions were asked to allow more detailed examinations of commuter preferences for public bus transportation. In this manner it was possible to account for factors such as proximity to the route and stops, sensitivity to service variables such as frequency and travel time and fare level. It is then possible in the interpretation of the survey data to estimate the potential usage as the actual service attributes deviate from the "ideal." A very high percentage of commuters would use a transit service that was very frequent, stopped near their place of residence and work, had a travel time similar to auto and had a low fare. The challenge is estimating usage on a service that has different service levels. The responses from the conditional survey were used for this estimation.

### 4.3.2 Commuter Rail

Commuter rail in the study area has been studied in the past, most recently in the 2006 *Cedar-Rapids River Rail Transit Project Feasibility Study* prepared by R.L. Banks. Information and conclusions developed in the 2006 study were updated and used for the evaluation. The 2006 study was a follow-on study drawing from a 1995 study of passenger rail in the corridor. The evaluation for the ICTS does not include any new analysis of passenger rail; rather the 2006 study is be relied on.

The following outlines the methodology for the commuter rail service option.

- The 2006 study provides information on alignments, stops, operating plan, ridership, capital and operating costs.
- The 2006 cost estimates are extrapolated forward to 2014 dollars for purposes of assessing costs and cost effectiveness.
- Ridership estimates are taken from the 2006 study.
- The 2006 study identified three potential rail lines: 1) Cedar Rapids (Eastern Iowa Airport) to Iowa City; 2) North Liberty to Iowa City; 3) special events service to the Amana Colonies area. The ICTS evaluation considers only the Cedar Rapids – Iowa City line because it is potentially relevant to the purpose of the ICTS.

#### *Alignment and Stations*

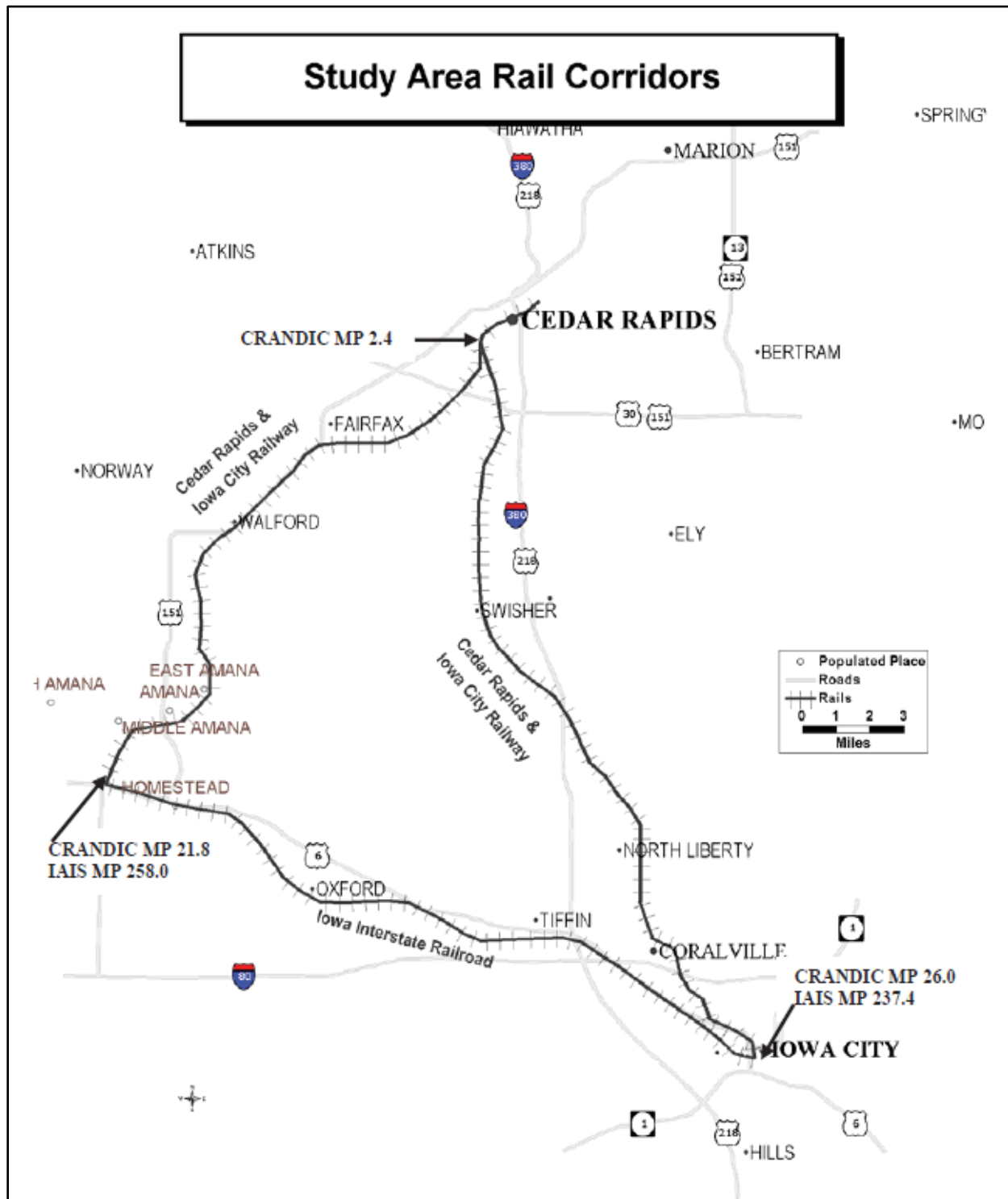
**Figure 4.2** on the following page shows the three alignments studied in the 2006 study. Only the 27 mile long Cedar Rapids – Iowa City line was included in the ICTS evaluation. Six station locations shown below were proposed in the 2006 study.

- Eastern Iowa Airport (northern terminus)
- Swisher
- North Liberty
- Coralville
- Riverside Drive (Iowa City)
- Court Street (Iowa City) (southern terminus)

#### *Service Plan*

The following summarizes the service plan used in the 2006 study. Two service plan scenarios were developed, an initial one for 2006 and a future scenario with higher service levels. The two scenarios differently significantly in service level, travel time (speeds) and cost.

Figure 4.2: Passenger Rail from 2006 Cedar-Rapids River Rail Transit Project Feasibility Study



***Year 2006 Service Plan***

- Equipment: Locomotive and coaches operating in push-pull configuration or diesel multiple unit (DMU) cars
- Maximum speed: 30 mph
- Running time including stops: 50 minutes
- Headway: Two hours
- Days of operation: weekdays
- Level of service:
  - Morning: two southward trips and one northward trip
  - Evening: two northward trips and one southward trip
  - All trips can be provided using one set of equipment

***Year 2030 Service Plan***

- Equipment: Locomotive and coaches operating in push-pull configuration or DMU cars
- Maximum speed: 55 mph
- Running time including stops: 33 minutes
- Peak Headway: weekdays, 30 minutes; weekends, 60 minutes
- Levels of service (weekdays):
  - Morning: six trains, each direction on 30-minute headways
  - Midday: headway of 90 minutes (one set of equipment)
  - Evening: six trains each direction on 30 -minute headways
- Levels of service (weekends):
  - Morning: three trains, each direction on 60-minute headways
  - Midday: headway of 90 minutes (one set of equipment)
  - Evening: three trains, each direction on 60-minute headways

### *Capital Cost*

These costs include railroad infrastructure such as the rail and ties, signals and switches; stations, rollingstock and facilities. The summary totals are shown in the table below. 2006 figures were taken from the 2006 R.L. Banks study; these costs were increased by 3 percent per year to reflect 2014 dollars.

**Table 4.3: Commuter Rail Capital Costs**

Scenario	2006 Dollars	2014 Dollars
Scenario 1 Initial Service Plan	\$21,407,000	\$27,118,000
Scenario 2 Enhanced Service Plan	\$35,281,000	\$44,693,000

### *Operating Cost*

The annual operating costs include labor, fuel, trackage rights fees and insurance. The summary totals are shown in **Table 4.4** below. 2006 figures were taken from the 2006 R.L. Banks study; these costs were increased by 3 percent per year to reflect 2014 dollars.

**Table 4.4: Commuter Rail Annual Operating Costs**

Scenario	2006 Dollars	2014 Dollars
Scenario 1 Initial Service Plan	\$5,014,000	\$6,352,000
Scenario 2 Enhanced Service Plan	\$11,960,000	\$15,151,000

The daily ridership figures for “Total Line” shown below in **Table 4.5** include short trips project to occur between North Liberty, Coralville and Iowa City. The figures for “Cedar Rapids” represent longer inter-regional trips.

**Table 4.5: Daily Ridership (total boardings – two-way ridership)**

Scenario	Total Line	Cedar Rapids
Scenario 1 Initial Service Plan	837	255
Scenario 2 Enhanced Service Plan	1,991	706

The increase in ridership from Scenario 1 to Scenario 2 reflects the change in service level and the projected increase in commuter travel in the corridor.



### 4.3.3 Comparison of Public Bus and Commuter Rail Options

Tables 4.6, 4.7 and 4.8 below show estimates of ridership, operating costs, and capital costs for each public bus alternative and commuter rail option. Table 4.6 below provides a breakdown of the annual operating costs for each service option, drawing the annual cost estimate from a calculation using annual vehicle revenue hours and the cost/hour. Revenue hours refers to the hours that the vehicle is in service, available to the public and can be collecting fares or payment for service. The operating cost estimates were based on a unit cost per vehicle hour of \$107.35 taken from Cedar Rapids Transit's 2014 operating costs. Operating costs include all labor for drivers, mechanics, administration and supervision, fuel, maintenance supplies, insurance and other reoccurring costs associated with the day-to-day operation. These costs are typically presented as an annual cost.

**Table 4.6: Public Bus Operating Costs**

Option	Service Plan	Operating Vehicles	Revenue Hours		Cost/Hour	Annual Operating Cost
			Weekday	Annual		
Bus Option 1	15 Minute Peak Service	10	76	19,312	\$107.35	\$2,073,000
Bus Option 2	30 Minute Peak Service	5	38	9,656	\$107.35	\$1,037,000
Bus Option 3	60 Minute Peak Service	3	23	5,848	\$107.35	\$628,000
Bus Option 4	1 Trip Peak Service	1	5	1,163	\$107.35	\$125,000

Table 4.7 on the following page provides the estimated public bus capital costs. Capital costs are typically presented as a one-time cost for the acquisition of buses and other equipment and the construction or acquisition of vehicle storage and maintenance facilities. The parking space unit cost was adapted from information assembled for the *Iowa Park and Ride System Plan* conducted by the Iowa DOT. The figures assume land acquisition in a metropolitan area, paved lots, space for setbacks, passenger amenities and a drive and bay for the bus. The total parking cost includes the parking space unit cost multiplied by the number of estimated spaces for each service option. The "Other and Contingency" category in Table 4.7 covers the cost of spare parts, specialized maintenance equipment, office equipment and other ancillary items.

**Table 4.7: Public Bus Capital Costs**

Option	Service Plan	Total Vehicles	Vehicle Unit Cost	Total Vehicle Cost	Facilities Cost	Park & Ride Lots (spaces)	Parking Space Unit Cost	Total Parking Cost	Other & Contingency	Total Capital Cost
Bus Option 1	15 Minute Peak Service	12	\$429,000	\$5,148,000	\$2,400,000	350	\$6,403	\$2,241,000	\$979,000	\$10,768,000
Bus Option 2	30 Minute Peak Service	6	\$429,000	\$2,574,000	\$1,200,000	250	\$6,403	\$1,601,000	\$538,000	\$5,913,000
Bus Option 3	60 Minute Peak Service	4	\$429,000	\$1,716,000	\$800,000	70	\$6,403	\$448,000	\$296,000	\$3,260,000
Bus Option 4	1 Trip Peak Service	2	\$429,000	\$858,000	\$400,000	20	\$6,403	\$128,000	\$139,000	\$1,525,000

The cost per rider estimate includes both operating and capital costs using the procedure developed by Federal Transit Administration (FTA) for their New Starts program. In this procedure capital costs are annualized given a discount rate and an economic life for all capital assets using the FTA Standard Cost Categories (SCC) worksheet. FTA implemented the SCC to establish a consistent format for the reporting, estimating, and managing of capital costs for transit projects. SCC worksheets which break down annualized capital costs for each option is provided in **Appendix C**. Daily ridership is measured as passenger boardings representing two daily one-way trips made by one commuter.

**Table 4.8: Public Transportation Financial Performance – 2014 dollars**

Service Option	Daily Ridership Round-trip	Annual Operating Cost	Capital Cost	Cost Per Rider
Bus Option 1	901	\$2,073,000	\$10,768,000	\$12.14
Bus Option 2	563	\$1,037,000	\$5,913,000	\$9.84
Bus Option 3	124	\$628,000	\$3,260,000	\$27.09
Bus Option 4	45	\$125,000	\$1,525,000	\$20.50
*Commuter Rail Scenario 1	1,025	\$6,352,000	\$27,118,000	\$27.12
*Commuter Rail Scenario 2	2,438	\$15,151,000	\$44,693,000	\$26.50

*\*Note: The capital costs for the commuter rail options are based on the 2006 Cedar-Iowa River Rail Transit Project Feasibility Study and were grown to year 2014 dollars for comparison.*

As shown in **Table 4.8**, the cost per rider of either rail service scenario is significantly greater than comparable bus options 1 and 2. A worksheet detailing the cost per rider calculation is provided in **Appendix C**.

**Table 4.9** below shows cost and revenue estimates for the 30 minute frequency option, Option 2. The capital cost provided in this table excludes the cost of the vehicle storage and park and ride facilities.

**Table 4.9 Public Transportation Bus Option 2 Costs and Revenues – 2014 dollars**

Service Option	Daily Ridership Round-trip	Annual Operating Cost	Capital Cost	Cost Per Rider
Bus Option 1 High Estimate	563	\$1,037,000	\$2,831,000	\$9.09
Bus Option 2 Low Estimate	563	\$676,000	\$990,000	\$5.36

*\*Note: Capital costs only include vehicles costs and 10 percent contingency.*

These figures are shown as a range reflecting the uncertainty of estimating costs for a service that is defined only conceptually, and the fact that there are many different ways to deliver the service, all of which have different cost implications. For example, the Low Estimate in **Table 4.9** assumes a lower cost bus which assumes a used bus rather than a new bus assumed in the High Estimate. The Low Estimate bus cost was \$150,000 versus \$429,000 for the High Estimate. Included in the capital cost estimate is a 10 percent contingency. Also the operating cost assumes a rate of \$70 per hour which reflects the cost of a private contract operator. The capital costs in **Table 4.7** on the previous page include costs for vehicles, vehicle storage as well as park facilities.

**Table 4.10** below shows estimated passenger revenue given the ridership estimate and an assumed fare of \$7.00 per round trip inclusive of all discounts. The table also includes the estimated annual operating funding needed calculated as the difference between the operating cost and the estimated passenger revenue. This is the amount that would require external funding (i.e., operating subsidy).

**Table 4.10: Public Transportation Financial Performance – 2014 dollars**

Service Option	Annual Ridership	Round Trip Fare	One-Way Fare	Annual Revenue	Annual Operating Cost	Potential Operating Subsidy
Bus Option 1	229,691	\$7	\$3.50	\$804,000	\$2,073,000	\$1,269,000
Bus Option 2 Low Estimate	143,557	\$7	\$3.50	\$502,000	\$676,000	\$174,000
Bus Option 2 High Estimate	143,557	\$7	\$3.50	\$502,000	\$1,037,000	\$535,000
Bus Option 3	31,582	\$7	\$3.50	\$111,000	\$628,000	\$517,000
Bus Option 4	11,485	\$7	\$3.50	\$40,000	\$125,000	\$85,000
*Commuter Rail Scenario 1	261,396	\$7	\$3.50	\$915,000	\$6,352,000	\$5,437,000
*Commuter Rail Scenario 2	621,791	\$7	\$3.50	\$2,176,000	\$15,151,000	\$12,975,000

#### **4.3.4 Subscription Public Bus Service**

This is a variant of the public bus transportation option. A subscription bus is tailored to the commuter needs of a specific locale or even a single employer. Large employers sometimes have a need to move a relatively large number of employees, 20 to 30 or more, from an origin area to the workplace. In concept the service works similar to a vanpool except the vehicle is larger, usually a small to medium size bus, and the driver is a professional rather than one of the commuters.

The design and operation of a subscription bus is very flexible. Often the service consists of one trip to the workplace and a return trip after the workday. The route can be designed to access the largest number of employees, with a park and ride lot is typically used as a collection point. The service can be limited to employees of a single company, or can be open to the public, and serve multiple employers.

The Whirlpool manufacturing plant near the Amana Colonies is an example of a location that may be effectively served by a subscription bus. With a current workforce of 2,200 and growing, and a location remote from large numbers of employees, the plant would benefit from a more structured approach to commuter options. However, the low density area of the plant cannot support regular fixed route transit service.

Costs can be expected to range from \$40 to \$70 per vehicle hour. The provision of buses could be included in a “turnkey” contract. A turnkey contract refers to an approach that provides a service that is complete and ready for revenue service. The contractor would provide the buses and other necessary capital items as well as a complete operating package. The total cost of a daily one-trip service would be in the range of \$60,000 to \$110,000 annually depending on details such as trip length, vehicle type, etc. This type of service can be very cost effective because contract operators can often operate the service on the margin, and the delivery does not require significant overhead and support.

Usage of subscription bus service is wholly dependent on the particulars of each application.

#### **4.3.5 Public Vanpool Program**

To meet the needs of dispersed origins, particularly in the rural areas not directly served by the I-380 corridor, a public regional vanpool program should be considered. This program would complement the proposed interregional express bus service and address service gaps of existing private vanpools by providing a service open to the public to provide efficient and cost-effective employment transportation for commuters with dispersed origins. Vanpools generally consist of 5 to 15 people, including a volunteer driver-member, that elect to commute together in a van. Vanpooling is distinguished from carpooling not only by size, but also by the greater degree of management and institutional involvement required.

Most vanpool programs do best where one-way trip lengths exceed 20 miles, where work schedules are fixed and regular, where employer size is sufficient to allow matching of 5 to 12 people from the same residential area, where public transit is inadequate, and where some congestion or parking problems exist. These conditions exist in the study area, particularly in the I-380 corridor.

Two vanpool programs are currently provided in the study area. The University of Iowa provides a program that is limited to university employees with 80 vanpools including 15 in the I-380 corridor from

the Cedar Rapids area. A private firm, vRide provides private vanpool service, however, it is up to individuals who live and work in the same areas to collectively organize.

An expanded public vanpool program can take different forms.

The vanpool program could be operated by an existing transit service operator or other agency eligible to receive federal and state funding. The benefit of this is that the operator could use federal and state transit funding for vehicle acquisition thereby lowering the cost to the commuter. The program requires administrative and management support to handle responsibilities such as vehicle acquisition, defining program policies and procedures, training drivers, assisting in ridematching and program accounting.

Alternatively, an agency could contract with a private firm such as vRide to handle all operational aspects of the program. The advantage of this approach is the private firm would provide vans, ridematching service, administration and management and marketing. Minimal oversight from a public agency would be required rather than a full complement of staff.

### **Vanpool Costs**

There are two perspectives on vanpool costs, the users' perspective and the other operator's perspective.

Vanpool user fees vary by length of the commute trip, size of the vehicle (or number of participants), and the type of program – public or private, employer based, etc. Some public programs are subsidized, which would mean the service is provided for less than the actual cost. This allows for lower user fees which should result in higher usage. **Table 4.11** below shows user fees for van pooling in the Cedar Rapids – Iowa City area.

**Table 4.11: Vanpool Monthly User Fees – 50 to 60 Mile Round Trip**

<b>Program</b>	<b>11 - 14 Passengers</b>	<b>5 - 6 Passengers</b>
University of Iowa	\$70	\$130
vRide	\$178	\$178
DART - Des Moines	\$88	\$131
KCATA - Kansas City	\$110	\$110

The University program's cost is partially underwritten by the University allowing for lower fees. Fees for DART and the Kansas City Area Transportation Authority (KCATA) are shown to provide information on vanpools programs provided by regional transit agencies as part of a regional public transportation policy. Typically agency operated programs cover some costs through grants or local transit funding. The Des Moines Area Regional Transit Authority's vanpool program currently includes 90 public vanpools, with annual operating costs being covered by the fare revenue. The cost of DART's guaranteed ride home program is approximately \$5,000 - \$6,000 per year.

From the provider's perspective program operating costs include direct costs such as van maintenance, fuel, insurance and licensing, and indirect costs such as staff support, advertising and promotion and administrative functions. Operating costs typically are in the range of \$10,000 to \$12,000 per vanpool, although program costs vary widely. The capital cost of the vans is either realized as an outright purchase cost, or a lease cost. Vans typically cost in the range of \$35,000 to \$40,000 per vehicle.

As previously mentioned, there is no reliable means to estimate the demand for vanpooling, however Survey #1 and Survey #2 revealed a high level of interest among survey respondents in vanpooling (and carpooling). Moreover, much of the study area outside of the urban areas does not currently have commuter transit service and likely will not be able to support transit in the foreseeable future.

**Table 4.12** below shows operating and capital costs for vanpool programs of 50 vans and 100 vans as an illustration of vanpool programs in the study area. The table also shows the potential for revenue generation assuming a user fee of \$80 per month. As shown, it is possible for fees at the \$80 per month rate to cover a very high percentage of the operating costs. In practice user fees would be set to achieve program policies regarding cost recovery.

**Table 4.12: Vanpool Operating and Capital Costs**

Program Size	Participants	Capital Cost	Annual Operating Cost	Revenue at \$80
50 vans	600	\$1,925,000	\$650,000	\$576,000
100 vans	1,200	\$3,850,000	\$1,300,000	\$1,152,000

#### **4.3.6 Public Carpool Program**

Employers and stakeholders have noted their desire for a centralized ride matching platform. This would need to be integrated into existing platforms and would need to be actively promoted by sponsoring agencies. A carpool program can be implemented less expensively than other programs and is recommended because of its ease of implementation and cost effectiveness. A formal carpool program is a natural element of a commuter transportation program. Employers and stakeholders have noted their desire for a centralized ridematching system. This would need to be integrated into existing programs and would need to be actively promoted by sponsoring agencies. Financial performance measures have not been provided for vanpools and carpools. Vanpooling and carpooling do not lend themselves well to the quantitative analyses common to many transportation strategies; demand modeling of these modes has never met with much success.

#### 4.3.7 Park and Ride Facilities

Initially, two park and ride locations are identified for the service near the Eastern Iowa Airport and one to serve the City of North Liberty. The Iowa DOT and the lead local agency should evaluate candidate locations in existing public property or right of way. If no public property is available to develop a park and ride structure, the Iowa DOT and lead local agency could enter into a no-cost lease agreement with a local business owner and/or acquire property and develop a formal park and ride

### 4.4 Evaluation Summary

Evaluation measures were identified based on best planning practices for similar public transportation systems as well as objectives and expectations developed through interactive discussion with the Advisory Group, public and input through the electronic surveys. The first part of the evaluation is based on the Transportation Needs outlined in **Section 2.4**. The second part of the evaluation is based on more quantitative measures including an evaluation of capital costs, operating costs and ridership identified in the previous section. This evaluation included an analysis of conceptual operating plans for commuter rail and public bus transportation outlined in the previous section. The evaluation of vanpool and carpool is based on typical costs for similar programs. **Figure 4.3** on the following page summarizes the evaluation using a consumer reports-type rating system.

#### 4.4.1 Evaluation Results

Based on the initial and detailed service evaluation, as well as input received from Survey #2, the following service improvements are recommended to be considered for implementation:

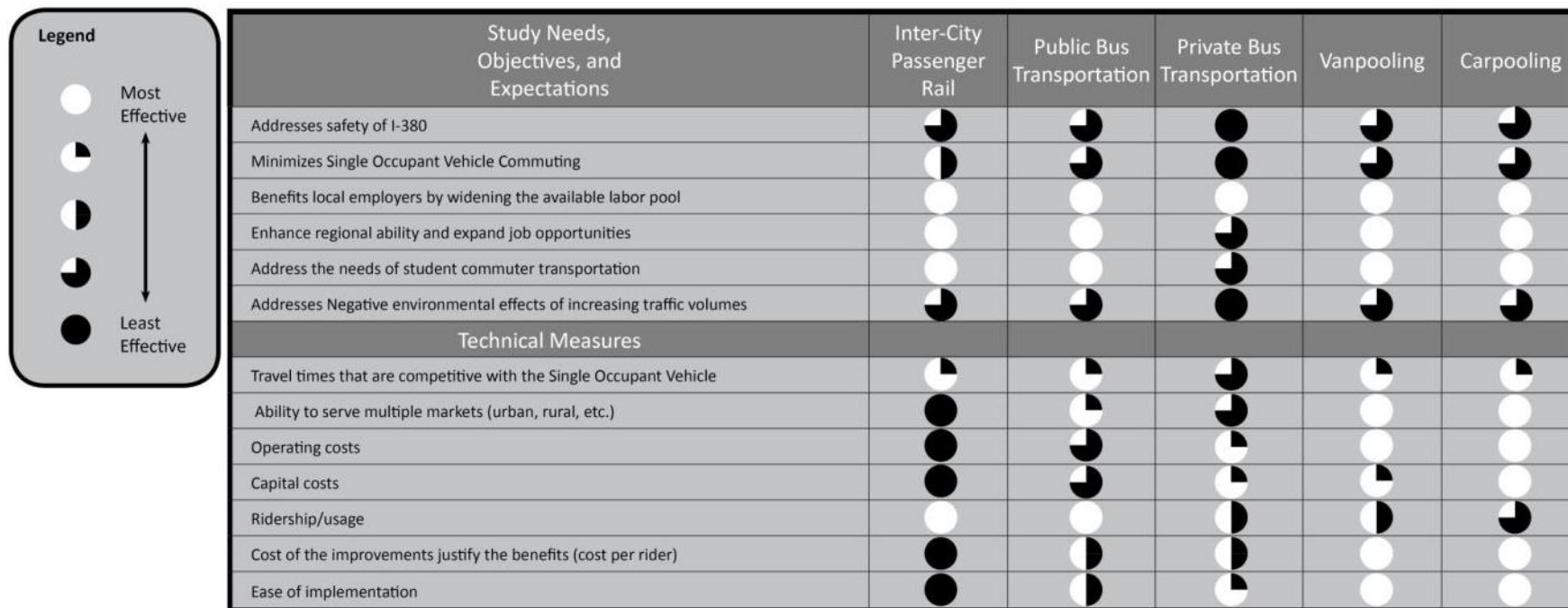
- **Public Interregional Express Bus Service:** A new interregional fixed route bus service connecting Cedar Rapids, North Liberty, Coralville and Iowa City. Several viable service options have been identified as part of the analysis, however, the final service plan would need to be determined based on available funding and financing.
- **Subscription Bus Service:** This service can be tailored to the commuter needs of a specific locale or even a single employer and would be ideal to serve large employers.
- **Public Vanpool Program:** This program would complement the proposed interregional express bus service and address service gaps of existing private vanpools by providing a service open to the public to provide efficient and cost-effective employment transportation for commuters with dispersed origins. Capital and operating costs have been provided for a program to support 50 or 100 vans. Survey #1 and #2 identified a high interest in a public vanpool program. However, the scale of the future program should be based on more detailed discussions and potential commitments with major employers and perspective riders.
- **Public Carpool Program:** A formal sharing of rides using one of the participant's private automobile. This program would need to be integrated into existing platforms and would need to be actively promoted by sponsoring agencies.

The cost per rider of either rail service scenario is significantly greater than the comparable public express bus service option. Therefore, at this time, the commuter rail service is not recommended to be pursued in as part of the preferred service improvements the short or mid-term. However, as pointed out in the *Cedar-Iowa River Rail Transit Project Feasibility Study*, the communities may reevaluate in the future as the region grows.



The simplify the evaluation and eliminate redundant evaluation measures, the Study Needs, Objectives and Expectations statements were collapsed into smaller categories based on similar characteristics and potential outcomes. Additionally, several technical measures were included based on best practices for evaluating service and infrastructure improvements.

**Figure 4.3: Evaluation Summary Matrix**



## 5.0 Funding and Financing of Transportation Improvements

Obviously none of the improvements can be realized without a funding mechanism. It is not intended for the ICTS to create a specific funding plan for the Commuter Transportation Improvements, rather potential approaches were considered to initiate a regional discussion that would lead to a funding plan. There are a variety of funding sources which the state, counties, cities, government agencies, local service providers, and employers can pursue to meet the financial needs of the proposed recommendations. If current trends continue, Federal transit funding is likely to continue to be flat or even decline. State and local funding is also constrained with the challenge of meeting multiple needs.

### 5.1 Analysis

**Tables 5.1, 5.2, 5.3 and 5.4** provide a summary of potential federal, state and local funding sources and public private partnerships with a description of eligible elements and general requirements. A full description of each funding mechanism is included in the following pages

**Table 5.1: Federal Funding and Financing Mechanisms**

Funding Mechanisms	Eligible Costs	Requirements	Advantages	Disadvantages
<b>Federal Funding and Financing Mechanisms</b>				
FTA Section 5307	<ul style="list-style-type: none"> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Urbanized areas</li> </ul>	<ul style="list-style-type: none"> <li>Flexibility; most programs of the type recommended are eligible</li> <li>Distributed on a formula basis</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds already used for current programs</li> <li>Competing needs</li> </ul>
FTA Section 5339	<ul style="list-style-type: none"> <li>Capital</li> </ul>	<ul style="list-style-type: none"> <li>20 percent local match</li> </ul>	<ul style="list-style-type: none"> <li>Funding to replace, rehabilitate and purchase buses and related equipment and bus facilities</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds already used for current programs</li> <li>Competing needs</li> <li>Discretionary program</li> </ul>
TIGER	<ul style="list-style-type: none"> <li>Planning</li> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Local sponsor</li> </ul>	<ul style="list-style-type: none"> <li>Applicability to a wide variety of project</li> </ul>	<ul style="list-style-type: none"> <li>Discretionary program; highly competitive</li> <li>One-time funding</li> </ul>
CMAQ	<ul style="list-style-type: none"> <li>Planning</li> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Establish clear nexus of project to reduction in emissions</li> </ul>	<ul style="list-style-type: none"> <li>Common funding source for public transit programs</li> <li>Distributed by Iowa DOT</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds</li> <li>Competing needs</li> </ul>
Surface Transportation Program	<ul style="list-style-type: none"> <li>Capital</li> </ul>	<ul style="list-style-type: none"> <li>Discretionary</li> </ul>	<ul style="list-style-type: none"> <li>Distributed by Iowa DOT</li> <li>Popular source for infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds</li> <li>Many competing needs</li> </ul>

**Federal Funding and Financing Mechanisms (Continued)**

Funding Mechanisms	Eligible Costs	Requirements	Advantages	Disadvantages
<b>Federal Funding and Financing Mechanisms</b>				
FTA Section 5310	<ul style="list-style-type: none"> <li>Planning</li> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Must serve elderly and persons with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>Would help ensure project meets the transportation needs of those with disabilities</li> <li>Distributed by Iowa DOT</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds</li> <li>Many competing needs</li> </ul>
FTA Section 5311	<ul style="list-style-type: none"> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Rural areas with fewer than 50,000 residents</li> </ul>	<ul style="list-style-type: none"> <li>Activities under the former JARC program, which focus on providing services to low-income access jobs are now eligible.</li> <li>Distributed by Iowa DOT</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds</li> <li>Many competing needs</li> </ul>
FTA Section 5311(f)	<ul style="list-style-type: none"> <li>Capital</li> </ul>	<ul style="list-style-type: none"> <li>Rural intercity bus provider</li> </ul>	<ul style="list-style-type: none"> <li>Addresses rural intercity transportation needs</li> </ul>	<ul style="list-style-type: none"> <li>Limited applicability</li> </ul>

**Table 5.2: State Funding and Financing Mechanisms**

Funding Mechanisms	Eligible Costs	Requirements	Advantages	Disadvantages
<b>State Funding and Financing Mechanisms</b>				
State Transit Assistance Program	<ul style="list-style-type: none"> <li>Planning</li> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Public Transit Agency</li> </ul>	<ul style="list-style-type: none"> <li>Direct users pay</li> <li>Distributed by Iowa DOT</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds</li> <li>Many competing needs</li> </ul>
Public Transit Infrastructure Grant Program	<ul style="list-style-type: none"> <li>Capital</li> </ul>	<ul style="list-style-type: none"> <li>Public Transit Agency</li> </ul>	<ul style="list-style-type: none"> <li>Common funding source for public transit facility construction, expansion, or renovation</li> <li>Distributed by Iowa DOT</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds</li> <li>Many Competing needs</li> </ul>
Capital Match Revolving Loan	<ul style="list-style-type: none"> <li>Capital</li> </ul>	<ul style="list-style-type: none"> <li>Public Transit Agency</li> </ul>	<ul style="list-style-type: none"> <li>No interest loan</li> <li>Distributed by Iowa DOT</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds</li> <li>Many competing needs</li> </ul>
Iowa Economic Development Authority	<ul style="list-style-type: none"> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>CDBG funds</li> <li>Additional funding under consideration</li> </ul>	<ul style="list-style-type: none"> <li>Applicability to projects serving employment transportation needs</li> </ul>	<ul style="list-style-type: none"> <li>Limited funds</li> <li>Many competing needs</li> </ul>

**Table 5.3: Local Funding and Financing Mechanisms**

Funding Mechanisms	Eligible Costs	Requirements	Advantages	Disadvantages
<b>Local Funding and Financing Mechanisms</b>				
Regional Transit District	<ul style="list-style-type: none"> <li>Planning</li> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>County with a population of 175,000 or more and contiguous counties</li> </ul>	<ul style="list-style-type: none"> <li>Regional participation in costs and funding</li> <li>Funding stream could apply beyond initial program</li> </ul>	<ul style="list-style-type: none"> <li>Represents a new tax</li> <li>Would require regional cooperation on a level not previously attained</li> <li>Requires new legislation and longer lead time</li> </ul>
User fees	<ul style="list-style-type: none"> <li>Operating</li> <li>Capital</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Direct users pay</li> <li>Ease of revenue collection</li> </ul>	<ul style="list-style-type: none"> <li>Limited revenues</li> </ul>
General Revenue	<ul style="list-style-type: none"> <li>Planning</li> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Few requirements</li> </ul>	<ul style="list-style-type: none"> <li>Budgets tight</li> <li>Many competing needs</li> </ul>
City or County Sales Tax	<ul style="list-style-type: none"> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Voter approval</li> </ul>	<ul style="list-style-type: none"> <li>Generates significant revenue at low rates</li> <li>Easy to administer</li> <li>Successfully in many other metro areas</li> </ul>	<ul style="list-style-type: none"> <li>Represents a new tax</li> <li>Hurts retailers Subject to economic cycles</li> <li>Can be regressive</li> </ul>
City or County Property Tax	<ul style="list-style-type: none"> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Voter approval</li> </ul>	<ul style="list-style-type: none"> <li>Broad coverage</li> <li>Easy to administer</li> <li>Generates significant revenue at low rates</li> <li>More reliable than sales tax</li> </ul>	<ul style="list-style-type: none"> <li>Generally unpopular with taxpayers</li> <li>Heavy competition (schools, parks, etc.)</li> </ul>
Motor Fuel Tax	<ul style="list-style-type: none"> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>State action</li> </ul>	<ul style="list-style-type: none"> <li>Significant revenues from small increment</li> <li>Easy to administer</li> </ul>	<ul style="list-style-type: none"> <li>Revenues subject to decline as fuel economies improve</li> </ul>
Vehicle Registration Tax	<ul style="list-style-type: none"> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>State action</li> </ul>	<ul style="list-style-type: none"> <li>Easy to administer</li> </ul>	<ul style="list-style-type: none"> <li>No direct link to transit</li> <li>Regressive depending on structure</li> </ul>
Business Taxes	<ul style="list-style-type: none"> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Approval of elected officials</li> </ul>	<ul style="list-style-type: none"> <li>Allows employers to cover the cost of commuter programs</li> </ul>	<ul style="list-style-type: none"> <li>Unpopular with businesses</li> <li>Potential disincentive for business location decisions</li> </ul>

Table 5.4: Public/Private Partnerships

Funding Mechanisms	Eligible Costs	Requirements	Advantages	Disadvantages
<b>Public/Private Partnerships</b>				
Transportation Management Association	<ul style="list-style-type: none"> <li>Planning</li> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Agreement between businesses, transit providers, government agencies, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Allow small employers to provide commuter services comparable to those offered by large companies</li> </ul>	<ul style="list-style-type: none"> <li>Need broad based support from local businesses including demonstrating clear need and benefits</li> </ul>
Direct grants or contract payments	<ul style="list-style-type: none"> <li>Capital</li> <li>Operating</li> </ul>	<ul style="list-style-type: none"> <li>Agreement with employers to directly share a portion of the costs of public transportation services</li> </ul>	<ul style="list-style-type: none"> <li>Direct users pay</li> </ul>	<ul style="list-style-type: none"> <li>Likely limited to largest employers with specific needs</li> </ul>

## 5.2 Conclusion

Current federal, state and local funding is limited with many competing needs. Additionally, potential new local sources such as sales or property tax would require voter approval. Eighty-six percent of respondents in Survey #1 said they may be willing, depending of the type of revenue generating approach, to support a future increase in public funding for interregional public transportation improvements. However, it is also acknowledged that these improvements would need to compete with other local and regional priorities. If these types of sources were pursued, the benefits of the improvements, as stated in **Section 1.3** on page 2, would need to be clearly explained to the public. A regional transit district provides support for one or more transit systems in an Iowa county with a population of 175,000 or more (which would include Linn County) and contiguous counties (if in agreement) to levy a tax for public transportation services. Currently DART in Des Moines is the only system doing this in Iowa. Additional options include public-private partnerships such as Transportation Management Associations (TMAs). Even without a formal partnership like a TMA, major employers should be asked to participate by buying passes for employees and/or organizing and subsidizing vanpool or carpool program.

Phasing and scaling the improvement can make the funding requirements less daunting. An option that should be considered is to secure one-time capital funding for an initial pilot demonstration of the public transportation component. Although limited, state or federal highway funding may be accessed due to the benefits to mobility in general and I-380 in particular. There may be the potential to use federal and state highway mitigation funding as part of future I-380 improvements, including the I-380/80 interchange.

**Table 5.5** below shows the funding requirements for the full implementation of the Commuter Transportation Improvements, and a scaled down initial phase of the program. The capital costs include purchasing six 40 passenger transit vehicles. In the initial phase, the service will use existing stops and shared use park and ride facilities. The low cost option includes lower cost transit vehicles and the high cost includes new transit vehicles. In operations, the low estimate assumes a private operator and the high estimate is based on typical costs for existing service providers. The intent is to show a range for the required funding. The costs for the transit and vanpool programs are taken from Chapter 4.

**Table 5.5: ICTS Funding Requirements for Implementation**

Program Cost and Funding	High Estimate	Low Estimate
<b>Capital Programs</b>		
*Public Transportation Transit Only (Option 2)	\$2,831,000	\$990,000
Vanpool Program (50 units)	\$1,750,000	\$1,750,000
<b>Operating Cost (net of revenue)</b>		
Public Transportation (Option 2)	\$535,000	\$174,000
Vanpool Program (50 units)	\$150,000	\$90,000
<b>Total Funding Requirement</b>		
Capital Funding Required	\$4,581,000	\$2,740,000
**Operating Funding Required	\$685,000	\$264,000
Total Capital and Operating Funding Required	\$5,266,000	\$3,004,000

*\*Note: Capital costs only include vehicles costs.*

*\*\*Operating funding would be an annual expense*

As shown, an initial public transportation and vanpool program could be implemented for about \$2.8 million in initial capital funding and about \$264,000 in annual operating funding. The Initial Implementation figures represent a minimalistic approach to creating the programs.

The funding approach should be based on the following conclusions and assumptions:

- New sources of funding must be secured. Current funding programs at the federal, state and local levels cannot reasonably be expected to provide significant revenue.
- User fees in the form of fares and vanpool participation fees should be optimized to cover as much of the program costs as possible, without discouraging usage. This will minimize external funding requirements.
- Private financial participation should be pursued. This can be through the formation of a TMA with a formal participation schedule, or through direct grants. Private funding can also be indirect, for example through subsidized transit pass programs.
- Funding already directed at portions of the overall program should be leveraged for maximum benefit. For example, Iowa DOT is already implementing a program to provide ridesharing software statewide. This necessary component of a ridesharing program can be funded by already committed funding. Likewise, Iowa DOT's *Iowa Statewide Park and Ride System Plan* may provide needed commuter parking facilities.

- Commuter transportation funding may be available as part of the traffic mitigation efforts required when Iowa DOT embarks on major construction programs along I-380. This possibility should continue to be part of the transportation conversation in the region.
- A phased approach that scales initial programs to available funding should be used to ensure that improvements are made in the near term.
- The interregional public transportation express service, the most challenging component, can be tested as a pilot program which could receive one-time funding from local and state governments, and private organizations. Once the demonstration is proved successful permanent funding sources should be easier to secure.
- Longer term funding sources, such as those that may be available through the establishment of a Regional Transportation Authority, can be pursued after initial transportation improvements have been made. A regional mechanism may be required to ensure any improvements are sustainable.



## 6.0 Recommendations

This section summarizes the ICTS recommendations and presents an outline of an implementation plan to implement the findings of the study. The implementation of the ICTS recommendations will likely involve multiple jurisdictions and agencies across the region. This section summarizes possible next steps.

### 6.1 I-380 Commuter Transportation Improvements

The study recommends a package of commuter improvements that could be implemented as a comprehensive program, or individually, reflecting the realities of funding and local priorities. This package of improvements includes:

- **Public Interregional Express Bus Service:** A new 2-way interregional fixed route bus service, as described on pages 73 to 76, connecting Cedar Rapids, North Liberty, Coralville and Iowa City. The preferred service frequency would be 30-minutes, although 15-minutes may be considered in the future as service grows. **Figure 4.1** on page 75 shows eight conceptual stop locations. Actual locations would need to be determined by a study implementation group comprised of public agencies, local governments, transit providers, and key stakeholders. However, to maintain a functional express service, this would likely be the maximum number of recommended stops.
- **Subscription Bus Service:** This service can be tailored to the commuter needs of a specific locale or even a single employer and would be ideal to serve large employers located off the I-380 corridor such as the Whirlpool near the Amana Colonies.
- **Public Vanpool Program:** This program would complement the proposed interregional express bus service and address service gaps of existing private vanpools by providing a service open to the public to provide efficient and cost-effective employment transportation for commuters with dispersed origins. An expanded public vanpool program could be operated by an existing transit service operator or other agency eligible to receive federal and state funding. The program requires administrative and management support to handle responsibilities such as vehicle acquisition, defining program policies and procedures, training drivers, assisting in ridematching and program accounting.
- **Public Carpool Program:** A formal sharing of rides using one of the participant's private automobile. The Iowa DOT is currently working on rideshare software and support that could be made available to local partners. However, it will be the responsibility of local partners to marketing and outreach to local employers.

## 6.2 Infrastructure and Technology Improvements

The Commuter Transportation Improvements also includes recommended infrastructure and technology improvements that will augment the service alternatives and make them more effective:

- **Park and Ride Facilities:** These are convenient locations along or near the primary commuting corridor to park private autos and connect to some form of public or private transportation which may include vanpools, carpools, and public bus service.
- **Regional Commuter Travel Information:** This is a readily accessible and comprehensive source of information on all commuter transportation options in a defined area. Information includes routing, pick-up points, schedules, fares and fees, and other information necessary for commuters to make decisions regarding mode of travel.
- **Transit Priority Measures:** These are transportation engineering tactics intended to make public transit and ridesharing more attractive to potential users by reducing travel time and improving reliability. Priority measures include strategies such as dedicated transit or high occupancy vehicle (HOV) lanes, bus-on-shoulder operation, traffic signal priority and queue jump lanes.
- **Guaranteed Ride Home:** This service is used in conjunction with public transportation and rideshare options to provide a ride home in case of an emergency (illness, personal crisis), usually a cab ride that is reimbursed up to a certain amount.

## 6.3 Statewide Applicability

Iowa's socioeconomic and passenger travel trends suggest there will be a need to identify travel demand management strategies for increasing the safety and efficiency of Iowa's transportation system. Increased population in and around metropolitan areas will create congestion and capacity issues as long as single-occupant vehicle travel remains the primary mode of travel. As Iowans drive longer distances to work, it will be increasingly important to identify and maintain commuter routes with facilities and services that provide alternatives to the single-occupant vehicle.

When examining the applicability of this effort to other areas of the state, the advisory group and project management team looked to identify other commuter corridors that were comparable to the Cedar Rapids-Iowa City corridor. The general consensus was that there was only one truly comparable corridor in the state of Iowa, that being the Ames-Des Moines corridor. Here you also have two metropolitan areas (population greater than 50,000), separated by roughly the same distance, and connected by a similar interstate highway facility that carries comparable levels of passenger traffic.

Having identified Ames-Des Moines as a comparable corridor where this effort may have some direct applicability, it was noted that a feasibility study was already underway for this corridor, led by the Des Moines Area Metropolitan Planning Organization. The final Ames-Des Moines I-35 Commuter Corridor Feasibility Study was published on August 19, 2014 and contained conclusions similar to those identified in the ICTS. The Ames-Des Moines study found that sufficient demand exists to warrant investment in a commuter express bus service operating along the I-35 corridor during the weekday peak periods.

While these two corridors are somewhat unique in a statewide context, the methodology applied in the development of the ICTS could certainly be applied to other commuter corridors, although the recommendations would likely differ. In addition to the ICTS, the Iowa DOT has also recently engaged in other commuter transportation planning efforts, including the recent completion of the Iowa Park and Ride System Plan and ongoing efforts related to the development of a statewide ride-matching system.

The *Iowa Park and Ride System Plan* will be used by the Iowa DOT to plan, evaluate, and develop a formal statewide system of park and ride facilities. For the purposes of this plan, park and ride facilities are places to park a vehicle when carpooling, vanpooling, or taking public transit. The plan provides the framework for determining the current need for commuter park and ride services, evaluating the existing system, identifying gaps in service, and guiding potential system expansion. The primary objective of the plan was to develop a location-specific, priority-based park and ride system that allows for coordinated planning and implementation of park and ride facilities that maintain highway safety, encourage ridesharing, support commuter transportation, and promote energy conservation.

Related to this effort is the development of a statewide rideshare program that can be used to match potential carpool and vanpool participants using a single ride-matching system. Historically, rideshare services across Iowa have been administered in a decentralized model where the Iowa DOT has not been involved in the procurement, administration, or marketing of local rideshare programs. This model requires rideshare organizations to provide separate startup funding and yearly support fees, reduces the overall number of matches available for potential rideshare participants, and is not consistently administered across the state.

The result of this has been an inefficient and costly system that does not serve all of Iowa's communities and results in fewer ride matches created. The statewide rideshare project will provide a more efficient, affordable, and user-friendly service by eliminating the need for multiple global administrators, reducing capital and operating expenses, and consolidating services into a single software system. The goal of this program is to increase the number of people who wish to take part in car pools, van pools, and transit services.

## 6.4 Next Steps

The next steps are based upon the findings presented in the preceding sections of this report and are the result of a technical analysis and the public and stakeholder engagement process. The steps are general; much additional detail is part of the process. In order to be successful, the ICTS recommendations must reflect the region's broader commuter transportation needs. The recommendations were developed in the context of the region's broader needs and objectives.

1. **Accept Conclusions and Recommendations:** The PMT and Advisory Group must first agree that the ICTS represents a reasonable initial step towards improving transportation in the I-380 corridor and the seven county area. These study management groups tentatively reached this conclusion at the November 19, 2014 meeting of the Advisory Group.

Iowa must then report on the study to the state legislature as required by the legislation that initiated the study. This is key because the legislature could assist with the required funding.

Key planning steps must be addressed with local and state programs, as well as area plans and programs. Incorporation of the ICTS recommendations into these formal process steps is required for most funding programs.

2. **Identify Lead Agency for Implementation:** The implementation of the ICTS recommendations will involve an active partnership between multiple jurisdictions and agencies within the region. However, one agency should be identified to lead the effort. ECICOG was suggested as the agency that could lead the initial effort of coordinating initial discussion between the study partners. Iowa DOT would continue to have an important role in the initiative. It was acknowledged that the study partners need to discuss this with their respective elected officials, boards and others before committing. However, ECICOG will take the lead in organizing the study partners in further discussion.
3. **Form Study Implementation Committee:** The lead agency will organize a study implementation committee comprised of study area jurisdictions, public agencies and service providers. The function of the committee would coordinate implementation efforts. The ICTS is just an initial step. There are multiple ways to realize the recommendations and literally hundreds of details that require addressing.
4. **Identify and Pursue Preferred Funding and Financing Options for Implementation:** The implementation of the ICTS recommendations will likely require multiple funding sources, some existing such as state and federal funding programs, some new such a regional transit district, a special assessment district or other sales or property tax.
5. **Create an Implementation Plan:** Given the recommendations and established priorities, and with more information on funding needs and availability, a detailed implementation plan should specifically list the steps to implement each of the projects and programs. There are multiple ways to operate and manage each of the service improvements. However, this will require more deliberation from the Study Implementation Committee, public agencies, transit service providers, local governments, and more detailed discussions with corridor stakeholders including major employers on how best to implement the improvements.
6. **Define Project Phasing Based on Available Funding and Priorities:** Initial funding through one-time state or federal grants or other mechanism may be able to fund initial improvements. Implementation can be phased based on initial available funding and financing, and the community's priorities. There are several initiatives already underway such as the Iowa DOT's park and ride program, the rideshare matching system deployment and the statewide transportation website. Pilot programs can be an effective way to test the effectiveness of concepts and garner support for funding and broader implementation. For example, a pilot of the interregional bus transportation concept may be effective in helping to create the support for a long term investment in the corridor.